GAS

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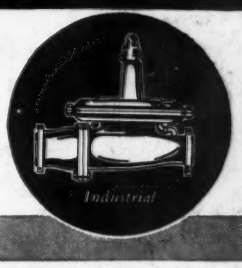

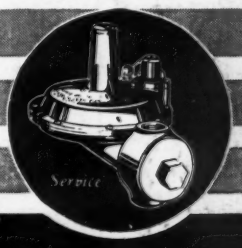

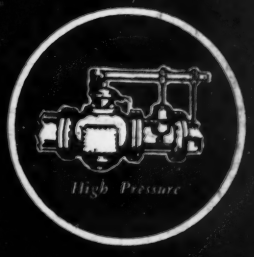

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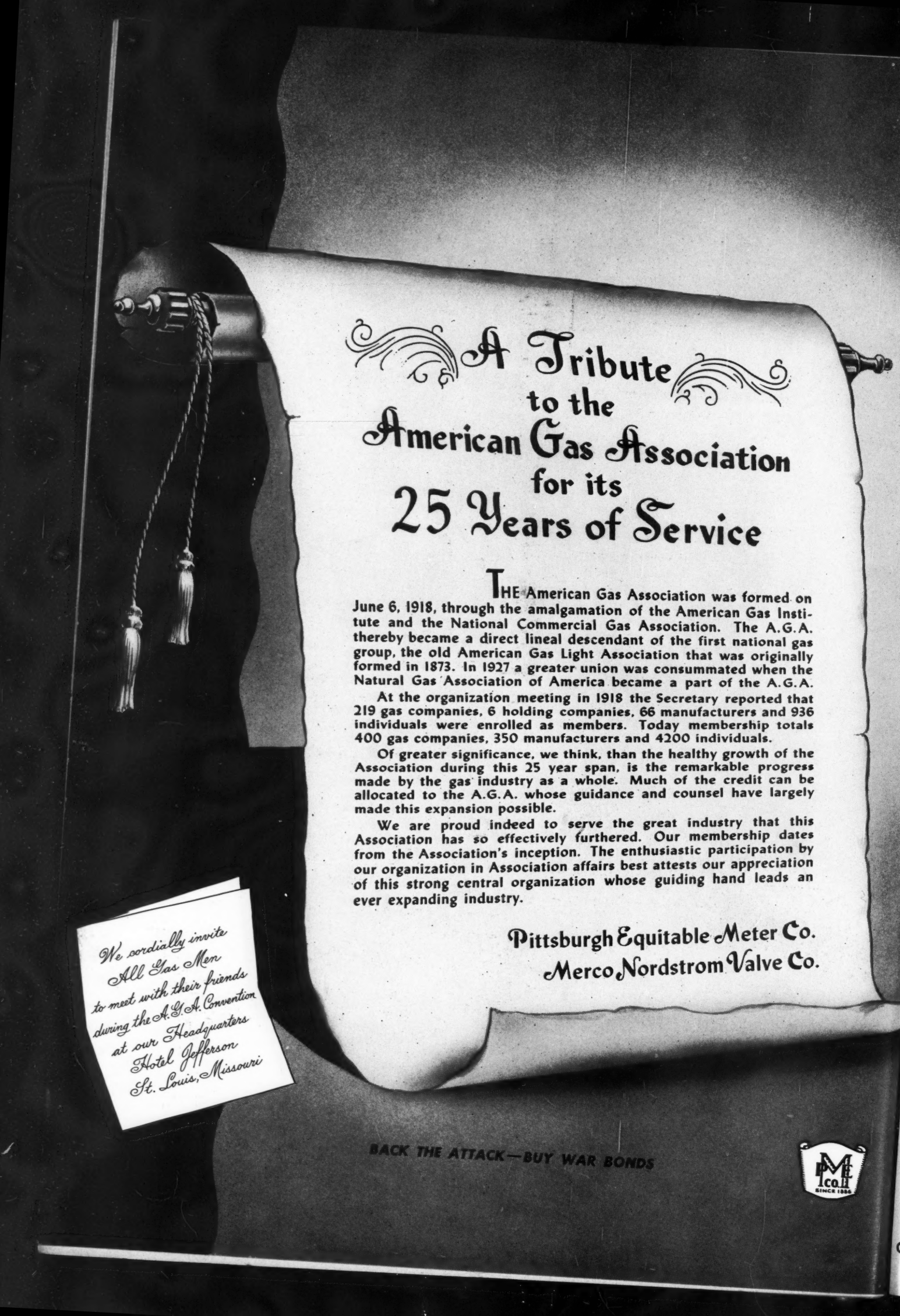
A Tribute
to the
American Gas Association
for its
25 Years of Service
THE American Gas Association was formed on June 6, 1918, through the amalgamation of the American Gas Institute and the National Commercial Gas Association. The A.G.A. thereby became a direct lineal descendant of the first national gas group, the old American Gas Light Association that was originally formed in 1873. In 1927 a greater union was consummated when the Natural Gas Association of America became a part of the A.G.A.
At the organization meeting in 1918 the Secretary reported that 219 gas companies, 6 holding companies, 66 manufacturers and 936 individuals were enrolled as members. Today membership totals 400 gas companies, 350 manufacturers and 4200 individuals.
Of greater significance, we think, than the healthy growth of the Association during this 25 year span, is the remarkable progress made by the gas industry as a whole. Much of the credit can be allocated to the A.G.A. whose guidance and counsel have largely made this expansion possible.
We are proud indeed to serve the great industry that this Association has so effectively furthered. Our membership dates from the Association's inception. The enthusiastic participation by our organization in Association affairs best attests our appreciation of this strong central organization whose guiding hand leads an ever expanding industry.
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We cordially invite
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BACK THE ATTACK—BUY WAR BONDS
SINCE 1886

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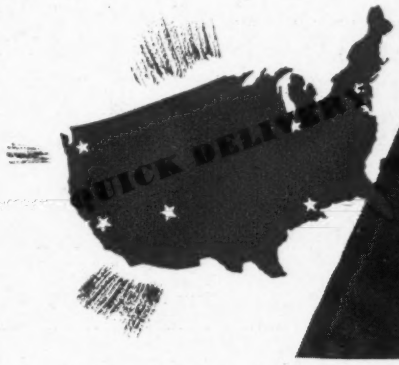

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REG. U. S. PATENT OFFICE

Nineteenth Year of Publication

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GUEST EDITORIAL

Federal Taxes and the Utilities

By ARTHUR F. BRIDGE, President, American Gas Association

THERE are several aspects of the current federal tax situation of vital concern to the gas utility industry. Certainly the gas industry expects to carry its equitable share of the burden of financing the war. However, to safeguard the future of the industry and to prevent the actual impairment of credit in certain instances, it is our duty to direct the attention of the proper public authorities to provisions of the present tax law which are deemed discriminatory and unjustly burdensome.

Briefly there are two major problems. The first affects only natural gas companies. Under the existing tax structure they are being penalized in proportion to their increased contribution to the national fuel requirements. Natural gas marketed by public utilities in 1943 will show an increase of 58% over the immediate pre-war period. Most of this goes to war industries—75% of the additional sales being industrial.

Since natural gas is an irreplaceable resource, it follows inevitably that the remaining life of existing reserves is correspondingly shortened. The present tax law makes no specific provision for this abnormal depletion or its resultant increase in cost of gas delivered to market. On the contrary, the indicated unit net income of the natural gas industry, after taxes for 1943, is approximately 30% less than for the pre-war base period 1936-39. In order to continue furnishing gas in the ever-growing volumes required to meet demands of war industry, these companies are forced to increase sharply their expenditures for leaseholds, exploration, drilling, compressors, and pipelines. It is most essential, therefore, that the tax law be modified to permit partial exemption from excess profits taxes commensurate with the accelerated rate of exhausting reserves, thus enabling these companies to maintain their credit and to finance the betterments so vital in meeting our national fuel needs.

Some progress has been made in coping with this problem. A special committee representing natural gas companies has prepared an able brief and is seeking remedial legislation. The form of relief requested in this brief is recognized in the present statute and has already been accorded to other natural resources industries such as timber and mining.

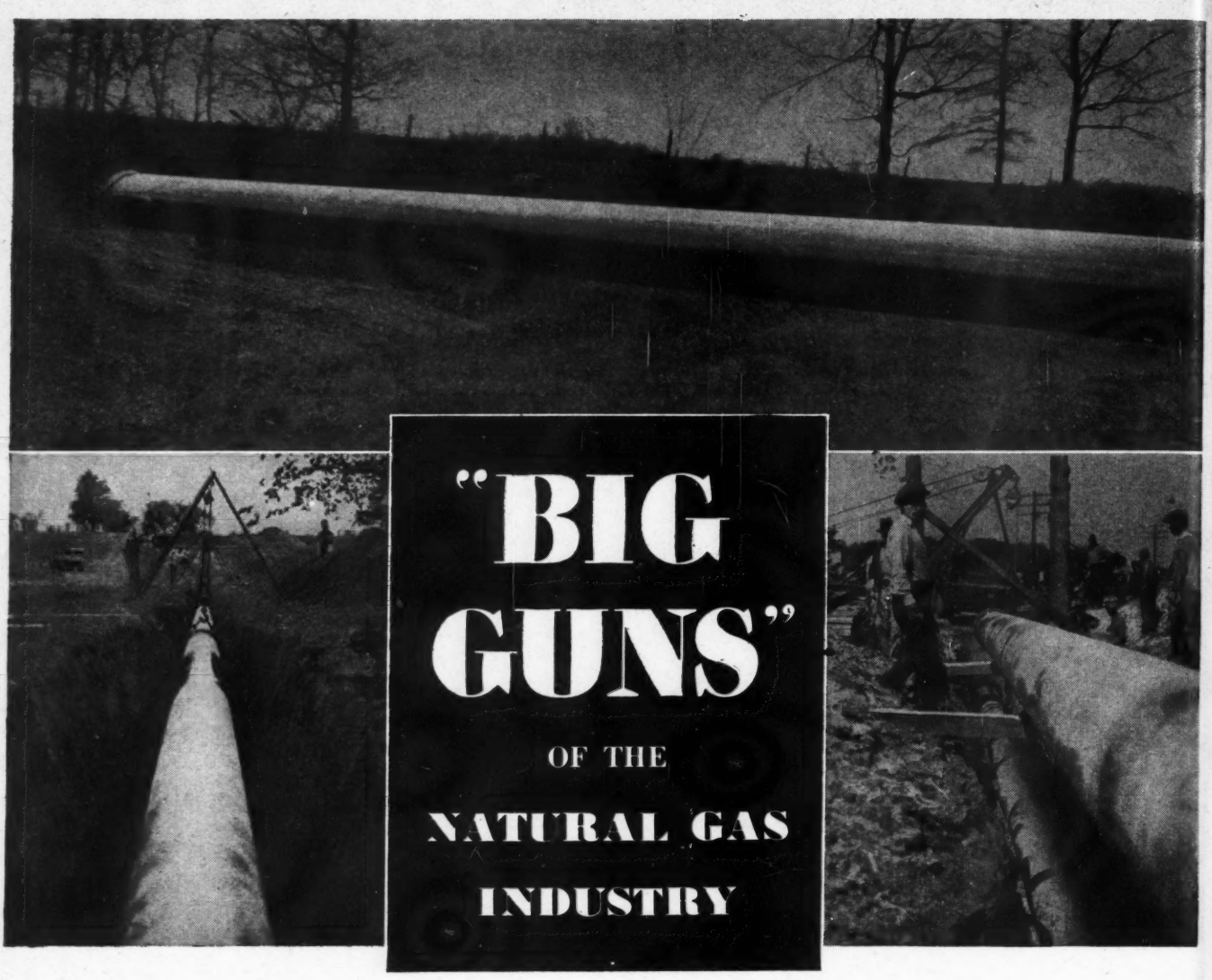
The second problem involves all privately owned utility companies. One result of the ever-mounting corporate federal taxes is to increase greatly the disparity in the tax burdens carried by consumers of privately owned versus publicly owned utilities. The privately owned utilities and their consumers are thus saddled with a handicap which already has reached an average of 25% of gross revenue for federal taxes alone.

Another related problem, affecting public utilities generally, is the wide variation in the incidence of the excess profits tax upon rate of return and, in certain extreme cases, the depression of earnings to the point of credit impairment. While the excess profits provisions of the act were ostensibly devised to recapture war-created and therefore *abnormal* corporate profits, they have nevertheless gravely reduced the *normal* equity income of many utilities.

Thus a recently analysis of the 1942 tax returns of 14 major gas, electric, water, and telephone utilities in California, after adjustment for non-recurring items, disclosed that the point of incidence of excess profits taxes ranged from 4.67% to 9.58% upon the depreciated historical rate base. Because of the 81% rate this tax almost confiscates earnings above the point of incidence. That the law in its present form hits public utilities harder than other industrial corporations is shown convincingly by a recent analysis in which the 1942 common stock earnings of 10 of the largest companies in nine industries were compared with the corresponding average earnings for the period 1936-39. The study included the following industries: electric and gas utilities, railroad, steel, oil, aircraft, automobile, chemicals, metals, and motion pictures. All industries except the public utilities showed substantial gains in 1942 over the base period, while the latter group declined by 28%, and only one company of the 10 had increased earnings.

I cannot too strongly urge that our industry act concertedly on these matters and that appropriate measures be taken to prepare and present the case of the utilities before the congressional tax committees.

Mr. Bridge is vice president and general manager of the Southern Counties Gas Co., Los Angeles, Calif.



"BIG GUNS"

OF THE NATURAL GAS INDUSTRY

LIKE our nation's heavy artillery, these "big guns" of the Natural Gas industry are helping to win decisive battles for our armed forces on all the fighting fronts. Welded and coupled together, they perform functions that are indispensable to the war effort—transmitting and distributing Natural Gas whenever and wherever it is needed . . . through pipe lines that span the continent.

This industry today is performing a two-fold service to the nation. While continuing essential fuel supplies to our people, it produces and distributes gas for myriad wartime uses, including the production of sinews of war . . . ranging from explosives perfected by recent chemical advances to healing agents in the name of mercy.

Columbia System is now supplying more Natural Gas for industrial use than ever before in its history.

COLUMBIA GAS & ELECTRIC CORPORATION

COLUMBIA SYSTEM

THERMALLY THINKING

By ELLIOTT TAYLOR

Washington Editor

A Plan

The most far-seeing, the most courageous and the most praiseworthy single contribution to the problem of post-war planning that it has been our privilege to study is that of the "post-war action" program inaugurated and presented to leaders of the gas industry by Servel, Inc.

In launching its Servel all-year gas air conditioning promotion around which the post-war action program is built, this company accepts the premises of the Committee for Economic Development, that "business must be ready to act quickly and surely when peace comes," to supply the products that a large reservoir of purchasing power will demand, and at the same time to insure full-time employment at good wages for all who want to work, so that that purchasing power may continue to be available in an uninterrupted flow through the distribution of wages, salaries and dividends.

Practically all planning for peace-time activities takes the factor of full employment into consideration, to be sure. But the weakness in most such plans is that they are too nebulous, too dreamy and hypothetical to be capable of swinging into immediate action. Products that are going to be introduced early enough in the post-war period to keep the wheels of American industry rolling along in high gear will have to be well past the vague laboratory and blueprint stages when the closing salvos of the last battle are fired. Even while the war is raging, Servel has been carrying on the necessary development and field tests to refine the gas air conditioning package to the place where it will be ready for the market as a standardized semi-mass produced product. During the past three years some 300 units have been installed through seven utility companies in various parts of the country, and every installation studied for performance, the while its owners' consumer reactions were being observed.

From the sum total of these observations the manufacturer was able not only to lay his own plans for manufacturing, but also to outline a program of gas company activities that will enable the industry to make immediate and effective preparation for exploiting the post-war air conditioning market.

President Louis Ruthenburg of Servel says that "an important new industry has been born." This may well be the case, but whether the promising infant will grow to an early and vigorous maturity will depend on the attention and the enthusiasm that are devoted to its welfare by its foster parents—the American gas industry.

The residential and small commercial air conditioning market has only been nibbled at, and most of the nibbling has been done by the electrical industry. Yet in the realm of comforts and conveniences it is one of the happiest dreams of American home owners. The initial cost of from $1500 to $2000 that will have to prevail on early installations does not of course open up the great mass market for home installations. But as increasing volume makes for lower prices, the base of the market will broaden until a volume not even predictable today may be a future reality.

For its appeal to the imagination and the ambitions of millions, as a tangible evidence of the oft-repeated assertion that gas is the modern fuel, and because it can be translated into practical terms of present-day preparation for future progress, we believe that the all-year gas air conditioning campaign merits the commendation and the cooperation of every gas utility in the nation.

It's Wonderful

Looking into the background of the officials of OWU who have immediate jurisdiction over the natural gas industry, we are impressed by the fact that all of the top-flight directors and deputies are men who have gained all or a large part of their knowledge and insight into public utility affairs in what might be termed the school of public ownership. J. A. Krug has spent all of his working life on the government, state or municipal side of the fence. The brief career of his attorney, Herbert Marks, is largely TVA and Bonneville power administration. Edward Falk, although lately from Consolidated Edison, was four years in the employ of TVA, and Paul R. Taylor served as a city manager, where he was in charge of municipally owned water and electric utilities from 1920 to 1928.

Looking back over what now appears to be a brief span of years, to the time when we first became intimately associated with and interested in the destinies of the gas utilities, we can recall the day when cooperation between the gas industry and governmental officials would have been as unthinkable as jurisdictional agreement between the WCTU and the Alcoholic Beverage Association. Those were the days when the more aggressive and outspoken members of state regulatory boards were commonly snapped up on to utility payrolls just to eliminate their nuisance value. Most of them proved just as ardent in protecting the interests of private ownership as they had been previously in championing the case of the commonwealth.

Yet today we see those who might be expected to be public ownership champions relying implicitly on the capacity and the willingness of privately owned utilities to obey the fiats of government emergency controls extend themselves toward the end that the objectives of those controls may be promptly attained.

The process in operation is a reassuring vindication of the democratic principle, destined to be as confounding to the charlatan in high office as it is to any last remaining public-be-damned exponent whose passing influence may be flickering out in the ranks of gas utilities.

The prophetic scriptural vision of the lion and the lamb lying down together may even in our time be expanded to include the donkey.

Wrong Horse

We observe with satisfaction that the FPC has finally aroused itself from the lethargy that pondering problems of public weal seems to induce in its members and informally approved an application for the construction of the natural gas pipeline from Corpus Christi, Texas, to Cornell Station, W. Va. At the present writing the certifi-

cate of public convenience and necessity has not been issued, but will be handed to Tennessee Gas & Transmission Co., according to the commission, upon a showing that the company is able to finance the line, can get WPB priorities and that there is need for the additional gas in the Appalachian area.

Since WPB's OWU had already approved the line in principle, there can be no doubt about either the demand for the gas or for the priorities on materials necessary to build it. And a great deal of FPC shadow boxing on the subject adds up to nothing but a meaningless waste of time at a point in our nation's destiny when time is a critical factor. Following their usual obstructionist tactics whenever new gas transmission lines are proposed, the assorted strange bedfellows of the National Coal Association, the Anthracite Institute, the United Mine Workers, and the Railway Labor Executives Association presented evidence tending to show that the line was not in the public interest. This time, however, they bet on the wrong horse, since OWU viewed with growing concern the delay that their rear guard action caused, and the opinion was informally expressed that unless approval was granted by the first of October the line would not be in service for the winter peak of 1944-45.

Upshot of the situation was that a lengthy memorandum of agreement had to be signed by Chairman Donald Nelson of WPB and Chairman Leland Olds of FPC, outlining who had jurisdiction over what. It all boils down to the fact that FPC can go ahead with its consideration of rate cases and other responsibilities under the Natural Gas Act; but when added gas transmission facilities are required for the war effort, WPB will say so, and FPC will take the hint and get out of the road while the essential work is being carried on.

Since the natural gas industry, at the request of OWU, is already urging conversion from gas to coal or other fuel in areas where the gas supply may become critical, and where coal is readily available, the action of the coal and railroad interests in carrying on their monkey business as usual policy is not only unpatriotic—it is lousy sportsmanship to boot.

Clap Hands

We have it on no less authority than a letter from the American Gas Association that the fresh approach in the new national advertising campaign of the association gives gas a "quality of magic," and we are glad to have this information to assist us in our critical appraisal of the first two pieces of copy that have come to our attention.

The letter of transmittal advises us, for instance, that a study of the opening ad will make it quickly apparent that the new campaign is . . . unhampered by the conventions of past thinking. All of our activities lately have been hampered by some form of thinking or other, and it is probably "past thinking" that moves us to the alarming conclusion that the whole campaign seems headed for a frivolous and trivial treatment that is at once incompatible with the seriousness of the times and destructive to the dignity of a great national industry.

Fantasy is indeed a fairy confection, an airy and ethereal creation that can be touched but lightly in its preparation, and only by a magician's wand. The heavy marks of the mason's trowel will remain forever to mar the myriad reflections of its pristine opalescence.

Advertising men of our acquaintance, skilled as they must be in use of the fantastic, sometimes suffer from a delusion that they are by temperament and experience fitted to invade the field of fantasy. The trail of their methodical stomping through the land of Peter Pan can be all too sadly followed. The partially erected and hastily abandoned fairy palaces that they leave along the way are not peopled by the exquisite little folk of a Grimm or D'Aulnoy; they are enlivened only by the crass and obvious cavortings of Superman. Under their sweating manipulation the technique of a Walt Disney degenerates into the insignificance of a Silly Symphony. And the fresh and appealing innocence of childhood sinks slowly to the pitiable level of arrested mental development.

Rash and intrepid we have sometimes been in matters involving our personal safety, our Christian standing in the community, and our reputation for scholarly attainment. But never so rash as to invade the sacred domain of fantasy. And thus it is in mixed admiration and envy that we agree with the American Gas Association that this "is advertising that makes a daring . . . effort to lift gas from the humdrum."

By the time these words are read, the first insertion in the daring series will have unfolded itself before the incredulous gaze of the American public. They will have seen the full page in the *Saturday Evening Post* and *American Home* in which the message of Gas—the flame that will brighten your home—is enlivened by the art work of two youthful figures, seated on a paper-maché battlement, being served a large turtle-like object by five Arabian Nights characters in silk football pants. They will have read the copy that glorifies idleness, that denies the art of fine cooking, the creative satisfaction that its exponents and practitioners know, and that voices the wishful thinking of the beautiful doll who would just clap her hands, and dinner would be ready.

Further wonders are to be unfolded in November, for it is with the November phase of the campaign that treatment swings from the Arabian Nights theme to that of the surrealism of Salvador Dali. Here "dinner would just come floating in without my moving a finger" is to be exemplified by a dream conception of the same young Americans seated on a cloud of noxious vapors, awaiting the landing of a fricasseed butler who is floating in from the wings bearing a great cold tureen and being pursued by just a wisp of carbon dioxide.

The inescapable import of the campaign to the gas industry seems to us to be too clear for comfort. Clap your hands, don't move a finger and dinner will come floating in—so long as you always dine in a restaurant.

Propaganda at Work

The electric range people have produced a series of cards listing helpful data for the housewife. The introductory card with supreme egotism states:

> "An electric range is the most modern piece of cooking equipment that can be offered the housewife. It incorporates a method designed to cook meals better with less effort than with outmoded fuels. Each of its automatic features has a definite purpose that brings unbelievable conveniences."

While the gas industry may take offense at such high-handed presumption, it nevertheless seems to work. We recall that our aged grandmother, now living through her fourth U. S. war, has endeavored to preserve a "fresh and modern" outlook. After 50 years over the gas stove, she is an electric range convert. Propaganda did the job.

THE OFFICE OF WAR UTILITIES

With Its Powers Clearly Defined and Respected by Other Government Agencies OWU, Backed by a Cooperative Gas Industry, Will Win Its Homefront Battle

By ELLIOTT TAYLOR
Washington Editor

THE battle of Washington is over as far as the natural gas utilities are concerned, and the winner is the Office of War Utilities of the War Production Board, under the perspicacious personal direction of Julius A. Krug, who, in addition to his job as war-time boss of all public utilities, is Donald Nelson's program vice chairman.

Bell-wethered by the combination gas and electric utilities, the manufactured gas industry has from the days of the old OPM been continuously and undeviatingly under the jurisdiction of WPB or its predecessor. But the early relationship of the natural gas industry, as an individual entity, was not so clearly defined, nor was there available in OPM either trained personnel or an organization capable of handling the specific and particular problems that were unique to natural gas operations.

With the creation within the OPC (now the PAW) of a special natural gas and natural gasoline division on June 1, 1942, members of the industry felt for the first time that their affairs were in the hands of government officials and industry committees who could understand and act on their problems, and there was as a result a widespread belief and hope in many quarters that all jurisdiction over natural gas would be taken from WPB and placed in the office of PAW. Holley Poe, newly appointed director of the natural gas and natural gasoline division of OPC, proceeded rapidly to build up a highly competent and well-informed staff to carry on his division's assignment, and the best natural gas men in America responded to his invitations to sit on the advisory committees. In August of that year Mr. Krug stepped out of his job as head of the power branch of WPB to become the board's deputy director general for production. Into his place went Herbert S. Marks as acting head of the power branch, a job he held until OWU was set in January, 1943. Mr. Marks was a new deal attorney, nine years out of law school, when he affiliated with WPB, and his practical insight into utilities affairs had been gleaned from a year as counsel for the trustees of American Gas & Electric Corp.

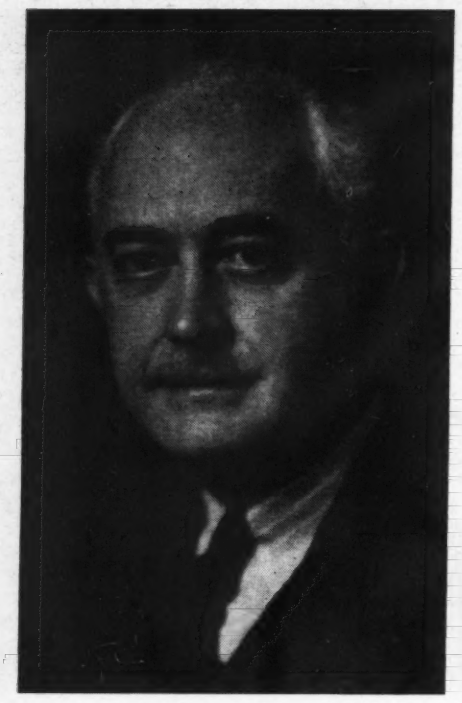
Since the function of the power branch was to assure the prompt and continuous delivery of gas and electricity to all essential users, including the homes of the nation, the success or failure of its natural gas department rested in the main on the location, availability and transmission facilities at hand for bringing it to market. This information was rapidly being accumulated by OPC and it is probable that for a few months at least OPC and not the power branch of OPC appeared destined to head natural gas affairs in Washington. This possibility appeared to be further strengthened when Harold Ickes was appointed petroleum administrator for war in December, 1942, heading a newly created agency supplanting the Office of Petroleum Coordinator. So-called inside stories in the capital were to the effect that both natural gas and natural gasoline would soon be transferred from WPB over into the new PAW. The stories proved to be 50% correct, at any rate, since in May, 1943, a liquefied petroleum gas section under the division of natural gas and natural gasoline of PAW was formed, and the entire LP-Gas organization of WPB was moved over to PAW.

But while WPB seemed to be little concerned with maintaining its jurisdiction over liquefied petroleum gas, it became increasingly apparent that there was no disposition to let the affairs of natural gas go into the hands of PAW by default. Plans for the formation of OWU were in the making late in 1942, with Mr. Krug slated for the post of utilities "czar." On Jan. 22 the Office of Power Director was created to "take over complete responsibility within the War Production Board for electric power, gas, water and communications." This was the first time that communncations were united under the same head as were the other public utilities—gas, water and electricity. This was a move toward the consolidation of WPB's industrial controls, and it also brought the utilities all in under one strong claimant agency for scarce materials under the Controlled Materials Program.

J. A. KRUG
Director, Office of War Utilities

On Feb. 5, 1943, the Office of War Utilities was established, taking the place of the Office of Power Director, and J. A. Krug was named as its director. Its objectives, as stated in the order establishing it, were "to unify the WPB's authority and responsibility for war utilities in order to assure the adequacy of war utilities to meet demands of the war production program and essential civilian demands."

The specific functions of the OWU, as defined in the order then and now, include: obtaining from industry and government agencies data on estimat-



PAUL R. TAYLOR
Director, Natural Gas Division, OWU

ALLAN W. LUNDSTRUM
Deputy Director, Natural Gas Division, OWU

C. L. BROCKSCHMIDT
Chief, Supply and Allocations Section

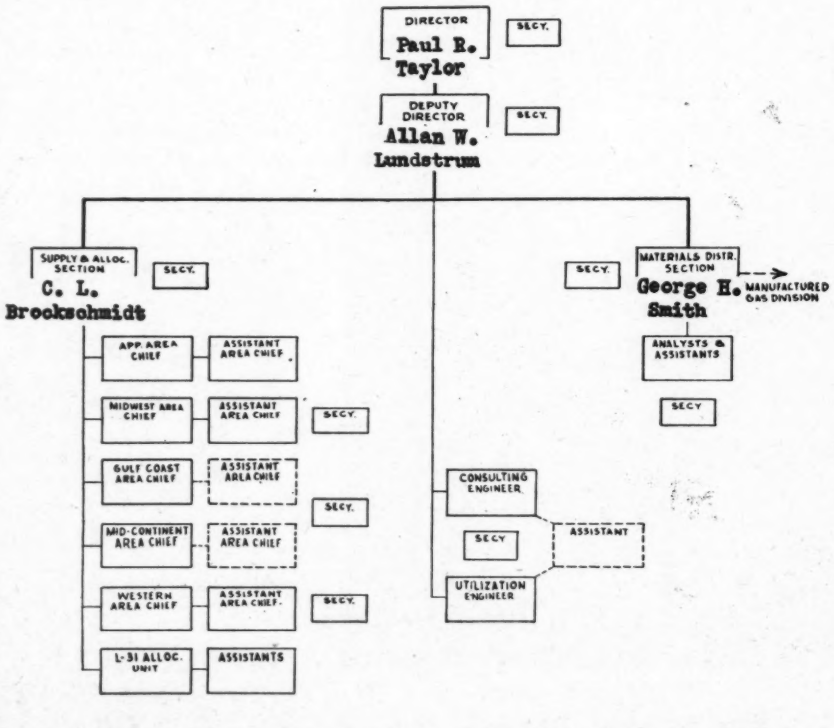
ed requirements and supplies for utilities; developing plans to forestall and overcome shortages in utilities supply through programming of existing facilities and providing for necessary expansion; developing and administering curtailment and allocation programs where necessary; insuring the delivery of supplies, materials and equipment necessary for the maintenance and operation of utilities and "advising the appropriate agencies regarding the availability of war utilities supply to accomplish their proposed construction and production programs." The new OWU took over the functions, records, personnel and funds of the Power Division and the Communications Equipment Division which were abolished.

Thus the director of OWU was handed a blank check, which he promptly filled in with all of the specific details that the boss had not written down. Under the broad and inclusive terms of the order, both PAW and the Federal Power Commission were set back into secondary positions with relation to war-time control of the natural gas industry, and there they remain today, and are probably scheduled to remain for the duration.

Mr. Krug's position was further strengthened early in March of this year when he was elevated to vice chairman of WPB—the number three spot in that organization—and placed in charge of the allocation of critical materials between the various claimant agencies.

PAW deferred gracefully to the new system of control over natural gas, and the director of its Natural Gas and Natural Gasoline Division has found in the WPB an ally both powerful and cooperative in enabling PAW to carry out its share of the responsibility for the coordination of natural gas activities. In fact, the functions of these two agencies are so interdependent that neither one would be well advised to attempt to carry on the job of the other. OWU says how much gas is needed and where; PAW reports where the gas is and how much can be transported, rec-

OFFICE OF WAR UTILITIES
ORGANIZATION CHART, NATURAL GAS DIVISION,



ommends enlarging of facilities or operations if necessary; WPB says yes or no, as the case may be, and if it says yes, the steel and other materials are forthwith allotted to construct these facilities.

But where an understanding cooperation was easily and early achieved between OWU and PAW, it is doubtful whether the same spirit prevailed in respect to the relationship between OWU and FPC. Jealous of its prerogatives under the Natural Gas Act, the commission was disposed until but recently to carry on, in the face of critical war-time demands for speed, the interminable hearings and postponements that have always marked its consideration of applications for certificates of public convenience and necessity to build gas transmission lines. FPC has either insisted upon, or encouraged, the presentation of duplicate evidence to the commission that had already been considered by WPB, with resulting delays that could have been prejudicial, if not indeed inimical, to the interests of the maximum war effort.

This minor challenge to OWU's authority over natural gas transmission was eliminated late in September when a lengthy agreement was signed by Chairman Nelson of WPB and Chairman Olds of FPC. Under this concordant, FPC continues to exercise its full statutory powers as set forth under the Natural Gas Act, but for all practical purposes WPB will in the future say where new gas lines are needed and FPC will promptly issue the necessary certificates for their construction. If there are two or more applicants, as in the case of the newly approved line from the Southwest to the Appalachian area, FPC may still decide who will be permitted to build it—all other factors being equal. Thus Director Krug of OWU, placed in a position of both responsibility and authority, has not hesitated to accept that responsibility nor to press for the authority necessary to implement it.

The organization set up early in the life of OWU was designed to execute all of the functions prescribed for the office. This structure, which remains substantially unchanged is as follows:

Office of the Director
Power Division
Manufactured Gas Division
Natural Gas Division
Fuel and Allocations Branch
Materials Control Branch
Inventory Control Branch
Administrative Branch

As is readily apparent, each division is concerned with its own particular industry, whereas the branches control various functions of OWU that have to do with a number or all of the industries represented.

OWU BIOGRAPHICAL SKETCHES

Julius A. Krug, director of OWU, was born in Madison, Wis.; graduated from the University of Wisconsin in 1929; took a master's degree in public utilities management from that university. He was first employed as research statistician by the Wisconsin Telephone Co.; thence to the Wisconsin Public Service Commission at the request of David Lilienthal to handle technical work on public utility rates and evaluations. In 1936 he went with the Federal Communications Commission and investigated toll rates of the long lines department of American Telephone & Telegraph. Selected by Governor Chandler to be directer of the Kentucky Public Service Commission in 1938, he fought for and secured many utility rate reductions. In 1937 with TVA in charge of power operation, he directed the deal for the purchase of Tennessee Electric for $80,000,000. Later he was sent by President Roosevelt to iron out differences between U. S. utility companies and the Costa Rican government. In June, 1941, he came to Washington as chief power consultant for OPM, successor to WPB, and in the fall of that year organized the power branch, serving as its chief. In August, 1942, he was appointed deputy director general for priorities control. Selected by Donald Nelson to head the new OWU in February, 1943, he is now serving in that capacity, and also as vice chairman of the War Production Board.

Edward Falk graduated in June, 1932, from Columbia College. In 1933 he went with TVA as director of research and rates. He worked for Consolidated Edison Co. of New York as assistant to the vice president from 1937 to 1941, and thence to Washington at Mr. Krug's request to become chief of OPM's power allocations section. Appointed assistant deputy general for distribution in August, 1942, he became deputy director of OWU in February, 1943.

Paul R. Taylor, director of the Natural Gas Division of OWU, has been engaged in public utilities work since graduating from Purdue University in 1915. His early experience was in street railway transportation in Kansas City and Indianapolis. From 1920 to 1928 he served as city manager of Grand Haven, Mich., where he was in charge of water and electric utilities. From 1928 to 1935 he was vice president and general manager of the National Gas & Electric Corp., operating properties in Michigan and Ohio. In 1935 he became associated with Stone & Webster and Webster Service Corp., from which he went with WPB on May 1, 1943. His work with Stone & Webster was sponsoring natural and manufactured gas companies supervised by the corporation.

Allan W. Lundstrum, deputy director of the Natural Gas Division of OWU, was loaned to WPB by Ebasco Services in New York City as a dollar-a-year man. He graduated from the University of Washington in 1923. In 1926 he received an M. S. degree from M. I. T., and immediately thereafter took a position with Brooklyn Edison Co. as an assistant engineer. From 1928 to 1930 he served as gas engineer for Columbia Engineering and Management Corp. in Columbus, Ohio. In 1930 he became a gas rate specialist with Electric Bond & Share, remaining with that firm when it was reorganized as Ebasco Services in 1935. At the time of his joining WPB in October, 1942, he was gas operating consultant with Ebasco.

C. L. Brockschmidt, chief of the supply and allocations section of the Natural Gas Division, was born and raised in Dallas, Texas, graduating from Texas A. and M. College in 1926. From 1927 to 1931 he served as an industrial gas sales engineer with the Lone Star Gas Co. In March, 1942, when he joined WPB, he was employed as combustion engineer with the Mississippi River Fuel Corp., St. Louis, which position he had held since 1931.

George H. Smith, chief of the gas materials distribution sections of both the Natural Gas and the Manufactured Gas Divisions of OWU, graduated from New York University in 1911, receiving his degree in civil engineering in 1912. Until 1926 he was chief gas engineer and assistant chief electrical engineer with the Central Hudson Gas & Electric Corp. in Poughkeepsie, N. Y. From 1926 until November, 1941, when he joined OPM as industrial analyst in the Power Branch, he was with the Empire State Gas & Electric Association as engineer and managing director.

Natural gas got away to a slow start from the standpoint of OWU organization. As a division it existed on paper from the outset, but it was not until May 1, when Paul R. Taylor was appointed its director, that it began to function as a practical individual identity within the Office of War Utilities framework. Selecting as his deputy director Allan W. Lundstrum, who had been serving WPB as a gas operating consultant for several months, he proceeded to set up an organization to unify all activities pertaining to natural gas. An industry advisory committee was formed, with Edward Falk, deputy director of OWU, serving as government presiding officer.

The Natural Gas Division, under Mr. Taylor, is responsible for mobilizing natural gas transmission and distribution facilities for war industries, military and naval establishments and essential civilian uses, and for recommending necessary measures to secure the delivery of natural gas adequate for these purposes. It is responsible for gas manufacturing capacity to the extent that such capacity is devoted to stand-by for natural gas or the mixing with natural gas.

This division, through its supply and allocation section, consults with PAW on any proposed construction, enlargement, or additional interconnection of any transmission lines. Working with

the Natural Gas and Natural Gasoline Division of the latter agency, they have arranged to supplement delivery of gas into the Appalachian and eastern Kansas shortage areas for the coming winter. Additional looping of the Panhandle Eastern Pipe Line Co. line from Texas to Michigan with a new 120-mile interconnection with East Ohio Gas Co. properties will supplement delivery in the Appalachian area by up to 100,000,000 cu. ft. per day. A 240-mile extension will draw 140,000,000 cu. ft. per day from the Hugoton field for the shortage area in the industrial Middle West.

The new $47,500,000 line from Corpus Christi, Texas, to the East, which has just been approved by FPC, was another joint conception of both the Natural Gas Division of OWU and the Natural Gas and Natural Gasoline Division of PAW. The line will involve the use of 215,000 tons of steel and will augment the gas supply in the Appalachian area by another 200,000,000 cu. ft. per day. It is expected to be in operation by the winter of 1944-45.

Supply and Allocations

The supply and allocations section is headed by C. L. Brockschmidt as chief. This section of OWU's Natural Gas Division administers WPB order L-31, having to do with natural gas and mixed gas limitations. It uses the following forms: PD-282, utilities announcement of proposed curtailments to customers under L-31; PD-283, utilities report for curtailment during gas shortage periods; PD-672, application for increased delivery of gas for uses other than space heating; PD-673, application for delivery of gas for space heating; PD-756, report of natural gas storage operations; PD-793, fuel application-stand-by facilities replacing gas; UF-27, natural gas pipeline company's report of daily supply, requirements and curtailments.

Direct contact between the division and the natural gas companies is through the five area chiefs, each of whom is assigned a group of companies and who reports to the head of the supply and allocation section. Each area chief recommends to his superiors policies to be inaugurated in his area and collects and correlates information from his area. He reviews projects affecting his territory and companies under his jurisdiction and recommends action to be taken. He is also responsible for estimates of quarterly requirements of material for his area, and for effecting the allocation of gas.

Problems of an engineering nature arising from a study of projects are assigned to the enginering staff which reports to the deputy director, Allan W. Lundstrum. This staff also gives consulting service to the area engineers.

The other section under the Natural Gas Division is materials distribution, with George H. Smith as its chief. This section is concerned with the distribution of materials and equipment to both natural gas companies and manufactured gas companies. The controlled materials allocated to OWU as a claimant agency are budgeted here for distribution to the companies requiring them. In the distribution of materials and equipment the section processes applications on a priority basis for new construction and for maintenance and repair materials that are in excess of the limitation of order U-1. This processing is done principally on Form 2774, which has superseded PD-200, PD-1A, and U-1 letters and amendments thereto as far as gas utility applications are concerned.

The section also acts as a vehicle for the approval by memorandum to other industry divisions which administer allocation of critical equipment. It maintains an emergency repair unit to speed up deliveries for such repairs; correlates mill and factory schedules with utility construction programs; studies the availability of substitutes for critical materials; keeps itself posted on the amount and location of second-hand equipment available on the properties of various utilities which have idle equipment for sale. Applicants are referred to such sources before ratings for the purchase of war equipment are given. The section's principal function, in short, is to "deliver the goods" when once a project is approved.

From the foregoing outline it can be seen that the government mechanism is set up and functioning, that in OWU it is doing its job with a reasonable degree of efficiency is attested by the fact that of about 20,000 employees in the WPB, less than 500 are on the payroll of OWU, handling all of the infinite detail connected with administering the war-time affairs of five great utility industries. The accomplishments made to date have been in the final analysis as much an evidence of gas industry cooperation and support as they have of governmental direction. Director Krug has always been quick to acknowledge and to commend the natural gas industry for the cooperative spirit that it has displayed.

He and his entire staff are relying heavily on that cooperation to bring the gas industry through the winter of 1943-44 with the same high record of accomplishment that was set up last year. To this end it has again inaugurated a conservation campaign which was only undertaken after a thorough discussion of the proposed plans with the natural gas industry advisory committee.

In the opinion of the director of OWU, natural gas will be available without interruption to essential war and civilian users if the campaign is carried through with the same vigor and determination that marked its predecessor. He has particularly urged on utility executives the necessity for encouraging conversion from gas to coal in areas where coal is plentiful, and where transportation difficulties would not be encountered. He has also urged further integration of systems, wherever practical, to insure a maximum of gas supply in those areas where it will be needed most.

It is likely that this will prove to be the last critical winter of the war for the natural gas industry, unless new problems not now foreseen arise on either the fighting or production fronts. With its powers and its prerogatives clearly defined and scrupulously respected by all other government agencies, and with an enlightened and cooperative gas industry solidly behind it, OWU is confident that both the agency and the gas industry will make the grade.

American Meter Co.'s Employee Insurance Plan

THE current bulletin of the Equitable Life Assurance Society features the progressive employee insurance plan of American Meter Co., which stands out as an example of good employee welfare policies of the gas industry as a whole. So far as is known, it is the first organization in the entire country to provide every form of group insurance available to employees.

As an early leader in employee welfare plans, American Meter Co. adopted 25 years ago Equitable group life insurance on the non-contributory basis, and subsequently employees have received the benefits of contributory group life insurance, accident and health, accidental death and dismemberment insurance, hospital expense insurance, surgical benefits, and group annuities. The group program was made complete by the addition of hospital expense insurance and surgical benefits for dependents on Jan. 1, 1940. Recently the program was improved by increasing amounts under dependent coverages to equal those provided for employees.

Reception room of the medical department, Peoples Gas Light & Coke Co., Chicago.

AN INDUSTRIAL MEDICAL PROGRAM

Peoples Gas Light & Coke Inventories the Health of Personnel, Salvages Manpower, Furthers Good Employer-Employee Relations

By H. H. STEINBERG, M.D.

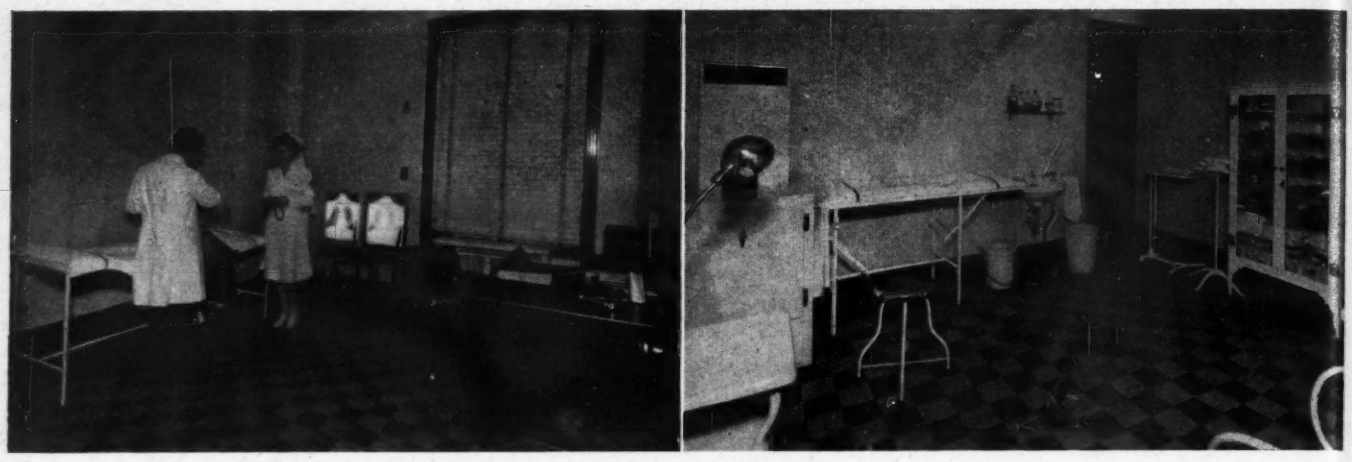
IN 1939, long before the war made a pressing problem of conservation of available manpower, a comprehensive program of periodic physical examinations was offered as a medical department service to all employees of The Peoples Gas Light and Coke Co. Fortunately, our management was alert to the value of a program designed to take a health inventory of personnel.

More important, however, for the employee it meant the opportunity to obtain accurate information regarding his health status with specific recommendations as to what he needed in the way of medical and dental care. This was supplemented by suggestions as to what procedure he might best follow in obtaining these services either under the direction of his family physician, or through recognized health agencies.

Everyone was in agreement that this service, primarily intended to promote the health of the individual employee, could only result in improving individual efficiency, in reducing absenteeism, in promoting proper placement of workers according to their physical status, and, generally, to promote good employer-employee relationships. One prime requisite, agreed to by both management and medical department, was that no worker should be discharged from employment as a result of the findings on medical examination. Rather, with this additional knowledge, the problem of below par performance of employees was found to be in a great many instances directly related to the health status of the individual, and correction of existing defects did much to improve the efficiency of the individual worker. The older employee, sometimes handicapped by the appearance of degenerative diseases, was properly placed in a job compatible with his physical status, yet taking advantage of his experience and skills. These measures were largely responsible, we believe, for a substantial reduction in industrial accidents, and most certainly in reducing long periods of absenteeism due to non-industrial illness, both of which had previously resulted in long periods of disability.

The medical examination, complete in detail, performed in a careful manner, and the findings evaluated by experienced and interested physicians offered more to both employee and employer than any other procedure in the industrial health program. This examination was considered as a service performed by the doctor primarily for the employee, and for that reason the findings were discussed fully with him. Recommendations were then made

DR. STEINBERG has devoted his entire career to the field of industrial health with special interest in the field of preventive medicine, specifically in adult health. He is now in charge of the industrial medical department of The Peoples Gas Light & Coke Co. In addition, he is a member of the faculty of the Northwestern University Medical School, giving courses in industrial health. His practice consists principally of consultation and research in problems of industrial medicine and occupational diseases.



Doctors' examining room (left); minor surgery (right).

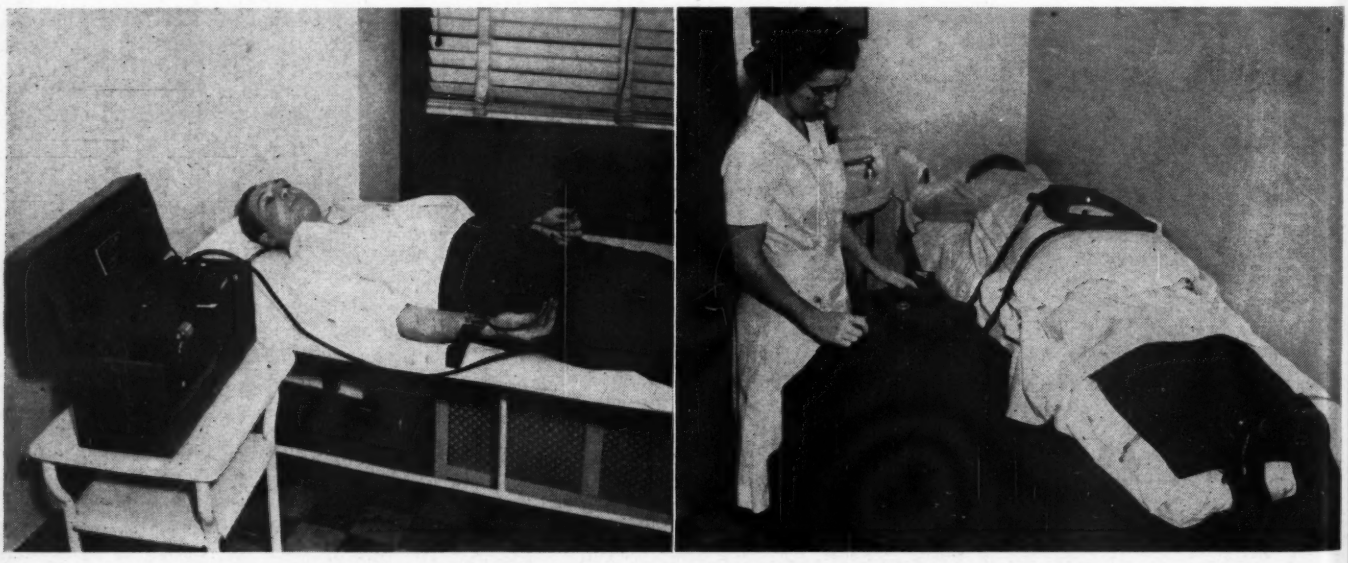
as to how he could obtain indicated medical care under the direction of a competent physician. All findings were considered as confidential between doctor and employee, except as they affected the health and safety of other employees, the maintenance of company property or equipment, or the welfare of the public.

You are probably wondering how enough employee interest and cooperation was stimulated so that they would participate in a voluntary program of medical examinations. The proof is in the pudding, and in the first two and a half years of the program about 2000 periodic physical examinations were performed on a voluntary basis. That this number had not been exceeded was limited only by the lack of available medical personnel, and these 2000 represent 98% of all employees directly approached. Yes, mistakes were made early, and in the first group selected, operating division employees, pipefitters, servicemen, street mechanics and laborers, it was thought that just a simple announcement of the availability of a doctor in the specific plant for the purpose of performing a complete medical examination was enough to encourage employee participation.

First Examinations

The gravest or perhaps the most trusting were those that we saw first. However, the thoroughness of the medical examination, the interest and sincerity of the medical examiners, and the practice of explaining the findings to the employee, was enough to convince these men that this was one endeavor that could only serve a useful purpose to employee, employer, and doctor alike. The word traveled fast, and soon appointments were made months in advance, and the waiting list continued to grow in length. When moving to a new location, favorable publicity preceded the arrival of the doctor, but still a meeting of all employees in that group was called, the purpose of the examination was explained to all assembled, and questions were asked and answered frankly. The response was gratifying.

The medical examination consisted of the securing of the past medical and occupational history, a brief resumé of the present physical condition of the individual as related to the medical examiner by the employee, and the performance of a complete physical examination. Routine laboratory examination included a urinalysis, a serologic examination of the blood for syphilis, and an X-ray examination of the chest. Other procedures performed when indicated were complete blood counts, the taking of electrocardiograms, the estimation of basal metabolism, and in certain instances, further X-ray studies. The average duration of the complete procedure at the plant



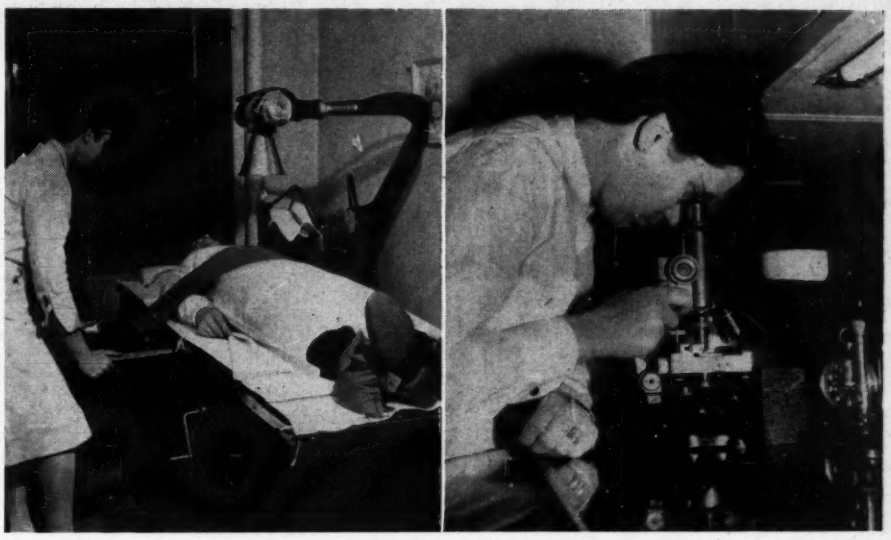
Taking an electrocardiogram (left); giving a diathermy treatment (right).

was about 45 minutes. Five to ten minutes of that time was used to explain the findings to the employee. The emphasis was placed on the quality of the medical examination, rather than on the speed of performance. It was felt that it would be poor medical practice to make definite recommendations to the employee on the basis of a cursory medical examination. Too often in many such programs negative findings on the basis of incomplete medical examinations have given individuals a false sense of security, and have served to discourage the utilization of sorely needed medical services. If indicated, the men were then encouraged to place themselves under the care of their respective family physicians, and the findings were furnished to him at his request. At periodic intervals the men were recalled to make certain that they were continuing under competent medical guidance and were receiving proper medical care.

To attempt to describe the usefulness of the periodic physical procedure, let me discuss briefly the findings in a group of 700 operating employees. These records have been analyzed carefully, and in each instance the follow-up on the type of medical care obtained in each case has been observed and directed for a period of five years.

Significant Findings

In this group of 700, there were 65% who had significant medical findings which merited medical and dental attention. There were 142 with dental defects, 48 with significant elevated blood pressure, 16 with other types of heart disease, 20 with advanced varicose veins, 18 with hemorrhoids, 17 with arthritis of various joints—to mention only a few of the commonly occurring conditions. There were 35 cases of markedly defective vision, 20 appearing in men driving company vehicles. In this last group within one month after the performance of the examination, 100% of the existing defects had been corrected. There were nine cases of latent syphilis uncovered, unknown to the infected employee. All of these were placed under treatment, and many of these have completed their treatment, and continue under our observation. At no time was it necessary for these people to lose any time from work as a result of this disease, and they continued as useful and cooperative workers. One active case of tuberculosis was discovered in an early stage, and this man has now returned to work after receiving proper medical care. Five other cases of arrested tuberculosis remain under the close supervision of the medical department.



X-ray equipment (left); laboratory diagnosis (right).

In this group, hernia was a common defect, occurring in 21 employees. To each employee with a hernia, the possibilities of serious sequelae which might occur were explained, and the effectiveness of competent surgical repair was stressed. Fortunately, the participation of employees in a company group hospitalization plan, which included surgical benefits, made it easier for us to encourage surgical treatment and, consequently, to rehabilitate these individuals. Sixteen of these hernias were corrected within six months after the examination, all of these on a welfare basis. In one of these cases there was a direct causal connection between the onset of the hernia and its appearance, and the company assumed the cost of repair. In four individuals, who were advanced in years and considered poor surgical risks, and in each instance employed in supervisory positions, expectant care was instituted, and these men continue under the observation of the medical department. There were two cases of cancer uncovered. These men were directed to competent medical sources for further care. These are a few of the conditions encountered, but there were many others. Lung conditions, gastro-intestinal disorders, genito-urinary disturbances, diseases of the skeletal system, and neuropsychiatric disorders—all of which we know now are under competent medical care.

Just what part this program has played in stabilizing personnel requirements, it is difficult to say. We *do* know that there are employees—many of them—who would not be working today if it were not for our program of periodic physical examinations. There are others—and there are many more of these—who are today doing a full day's work at their established skills, and who would have been working today at reduced skills or only part-time, were it not for the effectiveness of this program.

To the employees involved, the program has a real, tangible value. Management, too, is satisfied that a dollar-and-cents saving, as well as employee-morale element, has been created. To those of us who have had the pleasure of directing the program and who, for one reason or another, are unable to participate directly in our country's war effort, comes the unaccountable satisfaction of having "reclaimed" men out there every day on the production front who might otherwise have missed their chance to help win the war.

■ ■

Booklet for Restaurant Employees Listed by AGA

A special educational booklet by the publishers of "Cooking for Profit" has been announced by the American Gas Association through Roy E. Wright, chairman, food service equipment committee, industrial and commercial gas section.

The work is addressed primarily to the thousands of inexperienced men and women who have been going to work in restaurant kitchens to relieve the manpower shortage, and who need an introduction to the key items of gas equipment and instruction in the purpose, function and use of that equipment in terms a beginner would understand.

It was with both the gas man's and the restaurant man's problem in mind that the publishers of "Cooking for Profit" have issued this study. Orders for copies in lots less than 10 cost 20¢ each, and may be obtained by writing directly to Fenton Kelsey Co., 114 South Carroll St., Madison 3, Wis.

Post-war NOTES and NOTIONS

By STANLEY JENKS

Plastics

PLASTICS are nothing new. The war has opened up new uses and produced new developments in their adaptations as substitutes for the well-tried and time-tested metals and alloys which have been rendered scarce by abnormal war production. The plastics industry has its deep-enders, too, and it is becoming evident that the more sober-minded individuals in the industry are becoming quite concerned about the nonsensical ravings of their over-exuberant brethren.

Frank H. Shaw, recognized as one of the outstanding experts in the plastics industry, when receiving the Hyatt award, the highest honor bestowable by the plastics industry, said, "The war is serving as a proving ground for plastics and, when it is over, a good many unusual things will come to light. But I hardly like to talk about it *because the plastics industry has suffered too much already from ballyhoo.*"

Which prompts the question that, with an adequate supply of the good old metals and alloys, why use a substitute unless it can do the job as well or better, at a lower cost?

Tomorrow

Most of my friends in the gas industry are sales executives — men specifically charged with the responsibility of maintaining and building the load. They really have nothing to do these days but worry about the future. They know that today's load is going to be tomorrow's goal. Theirs is a real problem, and no wonder they talk it all the time and especially so, I forecast, at St. Louis a few days after these notes appear.

Just as wars cannot be won by generalship alone, modern weapons and manpower being very necessary, the forthcoming "Battle of the Fuels" cannot be won by our generals without adequate load-building appliances, equipment, and manpower. In fact, that's the whole idea in a nutshell. There is just one other necessary factor, and that is the status of the rest of industry.

It is worth noting now that our public utilities, unlike most other industries, will not be entering the post-war period with a backlog. The motor car builder, the refrigerator and radio manufacturer, and the house equipment lads, for example, can count on a post-war market, stemming from a pent-up need for these products during the unproductive war years. These fellows can and are doing something about it now. The gas industry is tremendously interested in the soundness and success of these post-war planning activities, far more intimately than so-called private business. Our post-war position will be greatly influenced by general conditions. Idle industries produce idle workers, and idle workers are poor gas company customers.

Therefore, I sincerely commend to gas utility executives the activities of the Committee for Economic Development, headed by Paul G. Hoffman, president, the Studebaker Corp., and organized throughout the length and breadth of the United States on a regional basis. The committee is privately organized and financed. It means business and, as I see it, it is anticipating now the inevitable challenge that will be forthcoming from the long-haired boys that private industry, our American capitalistic system, if you please, cannot cut the buck without the ministering guidance of a popeyed, vote-nursing bureaucrat in Washington.

In that its main function is to provide jobs for our customers, the Committee for Economic Development, if only in our own self-interest, is an organization all of us should be supporting to the limit.

Blue Printing the Future

There are two essential approaches to this problem. The first is on a national basis and, in A. M. Beebee of Rochester, heading the AGA Post-War Planning Committee, and Frank H. Adams, chairman of the AGAEM Post-war Planning Committee, the industry has two big-time, aggressively minded "imagineers" on the job, supported by committeemen whose experience alone in their respective fields qualifies them to know what the score is. Both these committees, if granted the support to which they are entitled, are capable of doing an outstanding job for the industry. Paradoxically, however, the broader their coverage, the more limited is their scope, because the gas industry is not a national industry in practice. It's as local as Tomkins Corners, and subject to all the limitations of its territory, especially in its thinking. The real problem for years, and I am thinking about its merchandising men particularly, has been to get them to adopt sales programs and policies, spilled over or spilling into other territories for the greater advantage of all concerned. This "my-territory-is-different" idea (I almost wrote alibi) is basically responsible for much that has been wrong in the merchandising picture. I believe that Arthur P. Hirose, director of market research and promotion for *McCall's* and *Redbook*, had this in mind when he called for fewer appliance models and sizes at the AGAEM annual meeting in June this year. The manufacturer's dilemma is having to cater to the whims, idiosyncrasies, and prejudices of too many men who fail to appreciate the costs involved in production changes to meet their so-called special requirements. The manufacturer in a very competitive field indeed has to play ball or suffer the consequences. It is a vicious circle, harmful to the industry, because it cripples the facilities of the manufacturers and puts an undeserving price burden on the appliance.

Simplification of models and sizes (and special variations of same) is indeed a major post-war gas appliance requirement, if we are to go places in the forthcoming "Battle of the Fuels." And the solution rests primarily in the hands of our gas utility merchandisers.

Report of the Pacific Coast Gas Association's

Gas Industry Development Committee

1. Potential Appliance Markets

THE PACIFIC COAST Gas Association's committee for Gas Industry Development, under the leadership of Chairman H. L. Masser, executive vice president of the Southern California Gas Co., has formulated a five-point plan of action toward insuring the future of the gas business on the Pacific Coast. The objectives in the PCGA program are: (1) Studies of Potential Appliance Markets; (2) Improvements in Gas Utilization Equipment; (3) Sales Promotion Plans, Advertising and Financing; (4) Engineering and Technical Studies; (5) National Economic Factors. These five points were extensively covered in a report presented before the 50th Annual Convention of the Pacific Coast Gas Association held in Los Angeles, Sept. 22 and 23. The first section of this report on Appliance Markets is presented herewith. Other sections of the report will be published in later issues of GAS.

THIS committee of the Pacific Coast Gas Association for Industry Development is concerned with many of the problems which will develop with post-war conditions and is largely comparable in function to the Post-War Planning Committee of the American Gas Association, and to many other committees in other industries of national scope and also of various governmental agencies. There are now about 85 such industrial committees and about 90 governmental ones.

In analyzing the broad problem, it was felt that the scope of this committee's work would be best defined by the title of "gas industry development." This title, in reality, provides for carrying the work indefinitely forward and beyond the immediate post-war period. The suggested coverage for this committee's plans are as follows:

1. To provide leadership to stimulate thinking and planning within the industry on problems affecting its development in our area.

2. To study major industry-wide wartime problems of general application to member companies.

3. To obtain specific studies and data from national and regional post-war planning agencies, and to suggest to such agencies the making of certain studies which are of importance to our industry.

4. To undertake the study and possibly research of the broader problems of our industry which do not lend themselves to treatment by individual companies.

5. To keep the industry informed of committee progress by means of effective publications.

While the above proposals for study are purposely broadly generalized and do not draw sharp limitations on the field of study, this committee believes that at the start the work should be directed to relatively few specific items upon which reports may be needed first.

1. Expected Extent of New Home-Building and Remodeling

Without doubt the prosperity of the gas industry depends essentially upon the number of domestic gas-consuming appliances in operation. National averages indicate that about 80% of the manufactured gas company revenues and about 55% of the natural gas company revenues are derived from domestic sales. On the Pacific Coast, the domestic natural gas revenues account for about 80% of gross revenues, while industrial sales at low profit margins cover most of the balance; therefore, our true net revenues are primarily dependent upon domestic business. The post-war period is certain to bring about more intense electric competition than ever before in the field of domestic usage. Present advertising by the large electric manufacturers is paving the way for the sale of electric ranges, water heaters, refrigerators and in fact a complete line of "all-electric" kitchen equipment. The gas industry cannot let this situation go unchallenged; we must be able to achieve at least as good a ratio of new appliance sales as our competitors. The volume of domestic appliance sales will be measured by the post-war extent of new home building and major house remodeling.

The committees of the American Gas Association have already directed their attention to the question of post-war housing construction and numerous reports have been prepared by governmental and various economic organizations. The gist of the figures compiled indicates a probable new housing program two to three times as great as during the immediate pre-war period. Expressed in other terms, this may be taken as a national figure of about 1,000,000 new dwelling units per year for a probable period of 10 years. This cannot all be attributed to the present cessation of building, but is also largely influenced by the purchasing power of the public with which to build new homes. It is the opinion of most analysts that the average cost of new homes will be around $4000, and that about two-thirds of them will have a rental value of $30 or over per month, and one-third, less than $30. With construction costs at all comparable to current levels, it is apparent that $4000 will build but quite a small house. War housing programs may have established a trend toward low-cost construction with the use of much prefabricated equipment and fixtures. These facts should be borne in mind when attempting to forecast the field of future markets.

It is, of course, obvious that new construction programs will by no means approach uniformity of extent over the country. This committee is concerned with the preparation of estimates of new construction by areas within the territory served by member companies of this association. Collaboration should be had with the AGA, but we must depend essentially upon ourselves and upon studies of various qualified agencies, such as governmental, chambers of commerce, building trades associations, banks, etc., for the development of figures of the expected extent of local new housing construction.

2. Expected Shifts of Population From War Plant Areas

The Pacific Coast is presently one of the major areas for the production of war materials and has therefore drawn in a great influx of new population. These plants cannot continue their present high level of employment in the post-war period; there is therefore bound to be a heavy exodus and scattering of population from the immediate areas of such plants. On the other hand, past experience justifies the belief that much or most of our new population of war workers will remain permanently on the West Coast rather than return to their previous eastern communities. This shift of population in our territory may therefore become a general dispersal and spreading of population and the elimination of overly congested spots rather than a material decline of total population.

Under the dispersal situation, our market for the sale of new appliances will not suffer seriously, nor will our companies be forced into many major construction jobs for providing new distribution facilities. However, shifts of population do necessitate the con-

PROPOSED SCOPE OF STUDY OF SUB-COMMITTEES OF THE COMMITTEE FOR GAS INDUSTRY DEVELOPMENT OF P. C. G. A.

I. Studies of Potential Appliance Markets

1. Expected Extent of New Home Building and Remodeling by Areas on the Pacific Coast.
2. Expected Shifts of Population from War Plant Areas.
3. Extent of New and Replacement Market for Ranges, Water Heaters, Refrigerators and Space Heating Appliances.
4. Probable Effect of Return to Peace-Time Conditions on Volume of Gas Sales and Possibilities of Increasing Desirable Loads.
5. Electric Competition and Methods for Maintaining Gas in Its Best Fields.

II. Improvements of Gas Utilization Equipment

1. Recommendations for the Improvement of Design and Functioning of Gas Ranges and Cooking Appliances.
2. Improvement of Gas Appliance Control Devices.
3. Standardization of Appliances and the Promotion with Manufacturers of Complete Equipment for "All-Gas Kitchens."
4. Proposals of New Gas Appliances.

III. Sales Promotion Plans, Advertising and Financing

1. Coordination of Utility Policy on Merchandising Practices and Sales Policies with Appliance Dealers.
2. Advertising: The National Program; Cooperative Advertising by the Utilities with Appliance Manufacturers.
3. Expected Extent of Post-War Financing Demands and Methods of Preventing Excessive Unprotected Liabilities.

IV. Engineering and Technical Studies

1. Production of High Btu. Gas from Coal and Oil Shale with the Production of Liquid Fuels and High Value Chemical By-products; sponsored by the Institute of Gas Technology.
2. Study of New Materials, Equipment and Techniques for Gas Distribution.

V. National Economic Factors

1. Manpower Problems and Maximum Post-War Employment.

struction of new housing units, and therefore provide an additional market for appliances. Knowledge of population shifts will be helpful in planning our organizations by localities, so that we can be most effective in procuring our share of the new business that comes to the area.

3. Extent of New and Replacement Market for Ranges, Water Heaters, Refrigerators and Space Heating Appliances

A reliable forecast of expected appliance sales is of prime importance to both the utilities and to the manufacturers and dealers. Estimates on this subject must be based to a considerable extent upon past experience in the various serving areas with due consideration to the sales effort which has been employed. However, new and major factors will enter into the post-war period; primarily these are the accumulation of deferred purchasing desires and the available spendable income.

Load surveys show the very high saturation of gas ranges, usually averaging ninety-odd per cent of the number of meters. However, in considering water heaters, there is encountered a very abrupt drop in the number, and of these there is still a surprisingly low percentage of modern automatic storage heaters in good condition. This obviously shows the large potential new and replacement market for these appliances. In localities where gas is cheap enough to be the almost universal domestic fuel, as is the situation in the natural gas areas of the Pacific Coast, space heating equipment generally exists in reasonable capacity; this is a situation quite at variance with many of the eastern areas. Here, to a large extent, the problem is the replacement sale of modern equipment which will do a better and more convenient and satisfactory job than much of the old equipment now on our lines. For new homes, our sales efforts will, of course, have freer latitude and we will be in a better position to promote the use of appliances that are desirable from both the customer's and the utility's standpoint. With regard to mechanical refrigeration, the saturation is low; electricity has the lead, but with the present perfection of the gas refrigerator, there is a tremendous open field largely dependent upon sales efforts.

The post-war extent of the appliance market will be largely affected by the deferred demand for equipment. This can be taken as at least two years' normal sales with no promotional campaigns. The factor of "spendable income" during the early post-war period is certain to be a major factor influencing sales of all equipment. The General Electric Co. has estimated that the public will hold about 24 billion dollars of cashable war bonds and that installment buying can expand this figure by another 8 billion dollars. Other checks of national resources indicate that there are possibly 20 million families having increased funds of over $1000 each available for the purchase of consumer goods. Such expenditures have averaged about 90% of the optional spending capacity and would indicate a potential market of 18 billion dollars. Previous total annual gas appliance sales can be compared to the corresponding spendable income and a measure obtained of the possible dollar value allottable to gas appliances. As an index of the change and increase of incomes, we may cite figures of the U. S. Department of Commerce, as shown in Table 2.

The foregoing figures indicate that beyond question there will be a tremendous post-war potential appliance market resulting from both the building of a million new dwellings a year and from deferred replacements, both supported by available purchasing funds. Our previous sales records, coordinated with respect to numbers of new buildings, should therefore be translated to the expected number of new post-war buildings in our areas to arrive at figures for the new homes' markets. The replacement market may be more difficult to estimate, but it is obvious that for a period of time it will continue at two or three times previous averages. These local studies should be made by groups which include manufacturers and representative dealers along with the utilities.

4. Probable Effect of Return to Peace-Time Conditions on Volume of Gas Sales

With the present high earnings of millions of customers there is but little tendency on their part to be economical in the use of gas; also, with increased employment and round-the-clock working hours, many more hot meals are served and greater amounts of hot water are required. Further, industrial gas sales have generally increased to near the limit of ability of the companies to supply. These increased gas demands in relation to supply have become so acute as to have caused the government to issue severe

restrictions on new or enlarged demands for gas.

With the return to peace-time conditions we may well anticipate a material reduction in the volume of gas sales and corresponding revenues. There is nothing we can do about the unit reduction of the customer's usage so long as he does not change or increase the number of his appliances. However, in many cases the customer can be sold new and additional appliances of greater capacity and utility, and we may thereby tend to sustain present high unit consumption. Most industrial loads will diminish in proportion to the extent of the continuing business of the user; there we have very little opportunity to salvage losses but fortunately we are but slightly dependent upon industrial sales for much of our net profits.

Knowledge of probable reductions of gas sales is of importance to us for estimating expected net income and for meeting rate questions, and in considering operating economies. Doubtless after the war there will be greater necessity for effecting economies, for utility companies generally may decline in earnings to an extent to bring them below the line of excess profits taxes. Operating economies must be made with considerable intelligence; particularly they should not be made in places which will impair our service in the eyes of the customer and thereby aid our competitors. Presently many services to customers are at reduced levels and are accepted in good grace because of the universal war-time reductions. If care and good judgment are used in the reversion to normal practices, some operating economies may well be possible and advantageous.

As an offset against the probable trend toward lower unit consumption, we have the opportunity of increasing our load factor through the sale of such equipment as automatic storage water heaters which are presently far below their saturation point. This item provides our best opportunity; next come refrigerators and then new appliances such as incinerators, ironers, dishwashers, etc. Space heating equipment tends to reduce load factor, and while it generally produces certain final net revenue, the amount of such net revenue per Mcf. is appreciably less than derived from the cooking and water heating load. In the higher cost new homes to be built, there will be opportunity to promote the use of thermostatically controlled central heating and this, combined with house insulation, will tend to smooth out the extreme peaks of the heating load and thereby make it more remunerative.

5. Electric Competition and Methods for Maintaining Gas in Its Best Fields.

War production has necessitated the installation of all possible electric generating capacity—about a 25% increase in the last three years — and presently this is operating at a high load factor. With the cessation of war production, a large surplus of electric capacity will result and be seeking a market. This will induce rate reductions for the purpose of inducing greater domestic use of electric appliances, and thereby create more acute competition with gas; particularly will this be true in territories largely supplied with hydroelectric power as on the Pacific Coast. Presently gas has a very substantial price advantage over electricity on a heat unit basis, but gas is confronted with higher future production costs as against probably lower electric costs. This is especially true for governmental hydro projects which are inclined to set rates on an unduly low basis, without much consideration to investment costs (notably the Tennessee Valley project) and free from tax charges. When adjustment is made for utilization efficiency, gas suffers due to correction for combustion products losses, but we will still have a clear price advantage although there will doubtless be much publicity to "low and reduced electric rates." Competition will also be further augmented by intensive sales campaigns and advertising by the large equipment manufacturers and power companies, so we must prepare to meet both factors: cost and sales propaganda.

Under present average natural gas rates, gas has a cost advantage of about three to one over electricity at 1 cent per kw. hr., and on the basis of net recovered heat. Therefore we should not lose sight of the fact that, where the job is a heating process, gas generally has the advantage. We do not want the gas business pirated away from us, and by the same token we should not endeavor to deny electricity its proper field. Much of our competitive problem is to convince the public that heating jobs can be most economically performed by gas, and with equal convenience and satisfaction.

While it has been cited by some analysts that the electric industry nationally obtains less than 40% of its revenue from domestic service, this point should not be taken as an indication that our electric competitors do not want or do not hope to get a larger share; in fact, their advertising is pointed for the domestic load. The manufactured and natural gas companies have an investment of slightly less than $5,000,000,000 as against the electric industry's investment of nearly $15,000,000,000, so it is clearly evident that the electric people have plenty of capital which they will want kept on an earning basis. This makes competition a certainty.

It may be interesting and advantageous to a limited extent, to have comparative figures between gas and electricity, as to capital investments and operating costs to serve various classes of load. However, such information only indicates to the independent gas company what type of load is most attractive to the electric company and therefore most subject to attack but gives no real assurance that efforts will not be made by the electric competitor to take what it can, even of the less profitable business. To the combination gas and electric company, such figures are of real value to guide the management to allocate sales efforts on a sound and economic basis.

Here on the Pacific Coast we have two principal combination companies and about 10 larger straight gas companies, but without competition between any of these interests. Our studies may therefore be confined to competition with straight electric companies, both privately and governmentally owned, and with primary regard to the cooking and water heating loads. While in most cases there is no question but that gas is the most economical fuel for these services, this fact in itself does not assure this business. We must have the appliances and the sales programs, that will "sell" our prospects in favor of gas. It is suggested

TABLE 2. INCOME BRACKETS

	Under $500	*$500-$1000*	*Over $2000*	*Median*
1935-36	17.0%	29.5%	18.3%	$1,070
1941	8.7%	20.2%	33.0%	1,485
1942	5.7%	19.6%	42.2%	1,775

Other independent figures by The McFadden Publication also show, for the past two years, the strong trend to the higher income brackets:

	Under $1000	*$1000-$2000*	*$2000-$3000*	*$3000-$5000*	*Over $5000*
January, 1940	31.6%	37.2%	19.1%	8.0%	4.1%
July , 1942	18.5%	32.3%	26.6%	15.2%	7.4%

the electric competition problem be approached particularly from the angle of preparing comparative sales facts for presentation to customers that will be the most strongly convincing in favor of gas.

Also, it seems desirable that we compile by areas the available or installed electric generating capacity of the different producing agencies, then present kilowatt loads with approximate load factors for each of their major classes of service, present surplus capacity, estimates of expected post-war decline of electric power usage, probable post-war surplus of generating capacity (segregated between steam and hydro power, privately and governmentally owned or operated), and a brief review of approximate average energy rates now in effect and estimates or opinions of post-war inducement rates which the various electric utilities might reasonably make effective for the competitive procurement of new domestic business. It is not recommended that elaborate or especially extensive studies be made of the above items, but rather a summarized compilation of these points which will give the various gas company managements a reasonably true picture of the situation within their own areas.

THE FIFTH FREEDOM

By LOUIS RUTHENBURG

President, Servel, Inc.*

AS I attended the impressive Purdue commencement a few weeks ago, I asked myself: Are "freedom from want" and "freedom from fear" entirely compatible with "freedom of opportunity"? I am impressed with the thought that the Atlantic Charter cannot reasonably achieve parity among the array of historic documents† so long as it is silent as to our fifth freedom.

I define that freedom as the right to work as free men and I interpret this right to include the right to work when and where and for whom we please, without restriction or penalty, so long as employer and employee agree, and the right to conduct a business as we see fit so long as the operation of that business is not in conflict with the public interest. In brief, the fifth freedom is freedom of opportunity.

An increasing weight of evidence indicates that Americans are rapidly awakening to a realization that our freedoms are in jeopardy; that we must renew our knowledge of the long, terribly difficult striving that resulted in the great benefits to which our generation is heir and which we have complacently accepted without understanding the need for eternal vigilance and self-sacrifice and active personal enlistment in the cause of recovering and preserving our freedom.

Our forefathers freed this nation from restrictive influences and created an environment conducive to cooperation on the part of all elements of our social structure — workmen, farmers, consumers, inventors, industrial pioneers, capitalists. In this environment an ingenious and energetic people developed a beneficent industrial economic cycle which has contributed to the American way of life and to the American standard of living.

Almost imperceptibly the environment so created has changed. Restrictive influences again threaten to throttle our freedom. Cooperation has been replaced by shortsighted, suicidal selfishness. Statesmanship is superseded by political expediency. National and state political administrations and legislatures slavishly serve powerful political blocs and neglect the broad public interest because we, the people, have degenerated and have forced them so to act.

No specific freedom can stand alone. Without free enterprise we can have no other freedom. Without the fifth freedom we cannot have the four freedoms of the Atlantic Charter. To the end that we may recover and preserve our traditional liberty, the faith, moral integrity, spiritual strengh and the philosophies of the founding fathers must be reborn in the hearts of all of us.

Intolerable economic pressures growing out of exaggerated group consciousness and suicidal group selfishness have inflicted such intolerable oppression upon the people of Italy, Germany and France that they have been driven to destruction. Perhaps their fate will precipitate a dark age of indefinite duration upon all the people of the world —an age to be characterized by indescribable human misery and hopelessness.

The same foul disease of exaggerated group consciousness and suicidal group selfishness has long afflicted this country. We are far gone down the road toward destruction. Symptoms identical with those that were apparent in Italy and Germany before the ascendancy of Mussolini and Hitler, and in France before the invasion, have long been obvious to our social, political and economic structures.

Although the United States of America have so far been too strong and too rich to be engulfed in revolutionary socialism, we *are* the victims of insidious, encroaching socialism. Probably no group is more conscious of this fact than the utility men of America.

Our national degeneration has been greatly accelerated by depression, unemployment and consequent widespread acceptance of demagogic leadership and destructive panaceas. Too many of our people are willing to exchange their liberties for security.

Now we are engaged in a struggle without precedent to determine whether we, the people of the United States, will be engulfed in the darkness that has obliterated France or whether we shall win regeneration.

We face a test other than that of winning the war. Internal forces as dangerous as any foreign aggressor threaten the country's future. These internal forces will surely destroy the nation unless we can find renewed unity and again learn to cooperate effectively among ourselves as we face a common, foreign enemy.

No group among us can escape that indictment. In Dr. Wriston's "Challenge to Freedom" we find the following thought-provoking paragraph:

*Excerpts from an address delivered before the Pacific Coast Gas Association 50th Annual Meeting, Sept. 23, 1943, Los Angeles, Calif.

†Dr. Elliott, president of Purdue University, in a message to the 1943 graduating class, lists these as: the Sermont on the Mount, the Magna Charta (1215), the Mayflower Compact (1620), the Declaration of Rights (England, 1689), the Declaration of Independence (1776), the Northwest Ordinance (1787), the Constitution of the United States (1789), the Declaration of the Rights of Man (France, 1789), the American Bill of Rights (1789), the Emancipation Proclamation (1863), President Wilson's Fourteen Points (1918), and the Atlantic Charter (1941).

The path to Washington was beaten firm by businessmen seeking special privileges in the tariff as a hedge against business risk. In a free nation the only appropriate hedges against business risk are courage and skill, resourcefulness and inventiveness. A Senate committee accurately stated historical fact when it said that "arrogant capitalism . . . forged the shackles that now restrict its every act." The awful penalty of bureaucracy has fallen upon business, and in the last decade it has expiated the sins that went with privilege. The road back to freedom is the abandonment of privilege as a goal. Rights will be restored only as duties are accepted.

As we think of this fifth freedom it is well to consider not only the short-term trend, measured in terms of a few future years, but the long-term trend as well. Both the long and short term trends will be controlled in great degree by the inexorable laws of action and reaction. It is interesting to speculate as to the variables of timing and amplitude.

Fortunately, our American system of government in its essential form is so articulated as to be extremely sensitive to the law of action and reaction. The short-term trend of events indicates very general reaction against the vagaries of bureaucracy. A wise observer of the current scene recently said, in effect, that two philosophies of government were born about the same time — Nazism in Germany and New Dealism in the United States. It is his belief that both are in the process of liquidation and that both will disappear at about the same time.

Business Is Planning

As we study the operation of the law of action and reaction in this current manifestation it is interesting to note that business leadership is reasserting itself. From many sources we hear of definite, constructive planning by businessmen for the post-war period. Just as the Congress, responsive to the immutable law of action and reaction, now reasserts its prerogatives, business leaders are beginning to emerge from the dog house to discuss planning for their own futures. They discuss a kind of planning quite different from that of the National Resources Planning Board. Their plans do not originate from academic deliberations of left-wing altruists in the hire of the federal government. Businessmen once more are resuming the kind of planning that brought supremacy to America. After suffering grievously from 10 long years of so-called national planning, which Dr. Wriston calls "planless planning," the businessmen of America have resumed their own planning, individually and collectively.

There are many problems related to post-war business environment. We must find their solutions, but we cannot postpone bold planning and courageous action until after the solutions are found. In large measure the solutions will grow out of the evolutionary developments of an expanding economy. Many worth-while suggestions will be developed by the splendid research personnel of the CED. With the courage and faith that are heritages of American business leadership we must drive boldly forward, assuming that the solutions of these monumental problems will in good time be achieved. By so doing we can most effectively bring about the favorable environment.

Dr. Wriston summarizes our needs admirably when he says:

> This war can be won and it can be paid for only if we produce. There must be such a burst of production, such a fever of energy, such a wealth of invention, such an outpouring of skill as the world has never seen before. All those resources are right at our finger tips through the magic of chemistry and engineering and technology, and the American people should speak with one voice, "Clear the road for production!" Whether the obstruction is business practice or union requirements or government red tape, all must make way for victory in war and recovery in peace.

I should like to remind you of thoughts well expressed by Eric Johnston, dynamic president of the Chamber of Commerce of the United States. Most of you will remember this quotation:

> After this war we will have the greatest plant capacity in history; we will have a greater source of raw materials, both natural and synthetic, than we have ever had; we will have the greatest number of skilled mechanics and technicians ever available to any nation; we will have the greatest backlog of accumulated demands for all kinds of commodities; and accumulated savings with which to buy this backlog of accumulated demands.
>
> To use this store of machine power and manpower, we must have a new order of cooperation among government, management, labor and agriculture.

In those words are well summarized both the opportunity and the challenge that confront post-war America. If our liberties and our cherished institutions are to be preserved, the businessmen of America *must* accept the challenge and realize their opportunities.

The short-term trend toward restoration of our fifth freedom is by no means discouraging.

Isn't there a possibility that through the sensitivity of our culture to action and reaction, through our generalized system of education, we may find regeneration and a new sense of spiritual and moral values before we are overwhelmed by the forces of dissolution?

One of our obvious needs is for accelerated and redirected education—education of the American people in the faith and philosophy of our fathers, in the simple elements of economics, in the processes, structure and objectives of American business under freedom of opportunity.

Through accelerated and redirected education we may so far increase areas of mutual understanding as to realize the essential "new order of cooperation" among the many social, economic and political groups of our country. By the same means we may achieve "understanding of how to go about getting the world we want."

Social Obligations

American business management during recent years has undergone a strenuous course of education. In the distant past, management was principally concerned with the successful manufacture and sale of goods. Management's attention had been so far concentrated on those objectives that it had been only dimly conscious of its social obligations. That ancient pattern of management functioned reasonably well in its time. None can challenge its successful accomplishment of its objectives of making and selling goods. So well was that job done that our country achieved the greatest material well-being for its average citizen ever realized in the world's history. Dimly conscious as management may have been of its social obligations, it performed a great social service as a necessary incident to its primary objectives of making and selling goods.

Proficiency in making and selling, accompanied by resultant social benefits, is not now good enough. Management is becoming conscious of its social obligations. For the future, management must be regarded as a trusteeship. The future pattern of management may be described as one designed to serve equitably, but not exclusively, the interests of three major groups—the customers, the people on the payroll, and the owners of the business. In this conception of management's responsibility there is implicit understanding that failure to serve equitably the interests of any one of these groups will result in serious injury to the other two.

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Army General Hospital Installs Gas as Fuel

Natural gas will be used as the fuel for the new Army General Hospital at Van Nuys, Calif., to be completed this month at a cost of nearly $5,000,000. In the 1727-bed institution, hospital-staffed by nearly 500 persons, gas will be used exclusively in the steam plant, laundry and kitchens.

TABLE 1. CONNECTED LOAD AND ACTUAL DEMAND DATA FOR MASTER METERED HOUSING PROJECTS SERVING NATURAL GAS FOR COOKING, WATER HEATING AND HOUSE HEATING

Project Symbol	No. Apts. in Project	Type of Construction	Average Connected Load Per Apartment—cu. ft. @ 1000 Btu. Range	Water Heater	House Heating	Total	Type of House Heating	Maximum Demands Per Apartment Cu. ft. @ 1000 Btu. 40° F. Mean Temp. Per Day	40° F. Mean Temp. Peak Hr.	30° F. Mean Temp. Per Day	30° F. Mean Temp. Peak Hr.	Design Load cu. ft./hr. Apt., WPB Housing Utilities Standards
Temporary Construction												
A	1692	*	60	20	34.5	114.5	†	588	35	757	45	37
B	310	Brick veneer	70	20	25	115.0	Circulator	512	31	656	39	32
C	102	Wood	60	22	27	109.0	Circulator	480	29	616	37	37
D	200	Wood	60	22	25	107.0	Circulator	442	27	580	35	32
E	552	Wood	60	21.5	25	106.5	Floor Furnace	330	20	470	28	30
F	60	Wood	60	20	25	105.0	Floor Furnace & Circulator	367	22	504	30	38
Permanent Construction												
G	858	‡	60	22	35	117.0	Floor Furnace	465	28	576	35	37
H	469	Concrete	60	§	39.2	99.2	Boiler Plant	381	23	459	28	30
I	772	Concrete	60	31	30.5	121.5	Circulator	418	25	512	31	34
J	154	Concrete	60	22	27	109.0	Circulator	388	23	466	28	35
K	119	Concrete	60	10.3	20	90.3	Circulator	355	21	430	26	30
L	374	Wood & stucco	60	22	27	109.0	Circulator	362	22	437	26	32
M	356	¶	60	20	27	107.0	Circulator	325	20	400	24	32

*60% of apartments are homasote demountable and 40% are plywood demountable construction.
†The homasote units are heated with 37,500 Btu. floor furnaces and plywood apartments with 30,000 Btu. circulators.
‡40% of apartments are permanent wood frame construction and 60% are plywood demountable.
§Water heating is included as part of house heating total.
¶Two-thirds of apartments are concrete and one-third wood frame and stucco construction.

Survey of Gas Usage in Master Metered Housing Projects in Northern California

By JOHN J. PUGH

Pacific Gas & Electric Co., San Francisco*

A REPRESENTATIVE number of the group housing projects in northern California, built under the sponsorship of the federal government, are being supplied natural gas for one or more or all the following services: cooking, water heating and house heating. These projects now house war workers and their families in the vicinity of industrial plants, military posts or shipyards and can vary in size from a project that will accommodate a few dozen families to one which will house several thousand. A large portion of this housing as it is connected to the gas distribution system is master metered; that is, an entire project is metered through one central metering point.

This report presents a record of actual gas use and peak demands experienced during the recent winter season (1942-43) for a number of the master metered housing projects in northern California that were fully occupied during the entire heating season.

In that the load requirements at some temperature base, such as the coldest daily mean temperature on record in an area, should be the design criteria for the adequacy of any network supplying a load that varies with temperature, it is of considerable interest to know, or at least to be able to estimate, demands at this base temperature. With this thought in mind an attempt has been made to correlate the use in the various projects with temperature so as to determine probable peak requirements under abnormally cold temperature conditions.

Two general classes of group housing have been built in this territory: a permanent or semi-permanent type constructed of concrete or wood and an emergency type of wood frame structure that is obviously intended to last only for the duration. The daily use per apartment for master metered housing projects of these two general types that are supplied gas for cooking, water heating and house heating are plotted against temperature on Figs. 1 and 2.

For any project, the use versus temperature curve was determined as follows: The monthly billing figures for the months of the 1942-43 winter season were converted to an average daily use per dwelling unit and this use plotted against the average daily mean temperature (U. S. weather bureau data) effective during the billing month. The use per apartment on days of low mean temperature was calculated for those projects where daily metering figures were available. By averaging the use per apartment on several days of low mean temperature and plotting this use against the average daily mean temperature for the group of days investigated, a representative use at low temperature was obtained. Then, by averaging the monthly points and obtaining the use on the day of average (normal) winter temperature (this method of averaging use versus temperature data is explained in detail in paper entitled "Forecasting Winter-Day Load in a Natural Gas Territory," see PCGA proceedings, vol. 32, p. 65) and drawing a line through this point and the previously determined point for the day of low temperature, a relation is established which shows use per dwelling unit as a function of daily mean tem-

*Presented before the Technical Section of the Pacific Coast Gas Association at the 50th Annual Meeting, Sept. 22 and 23, Los Angeles, Calif.

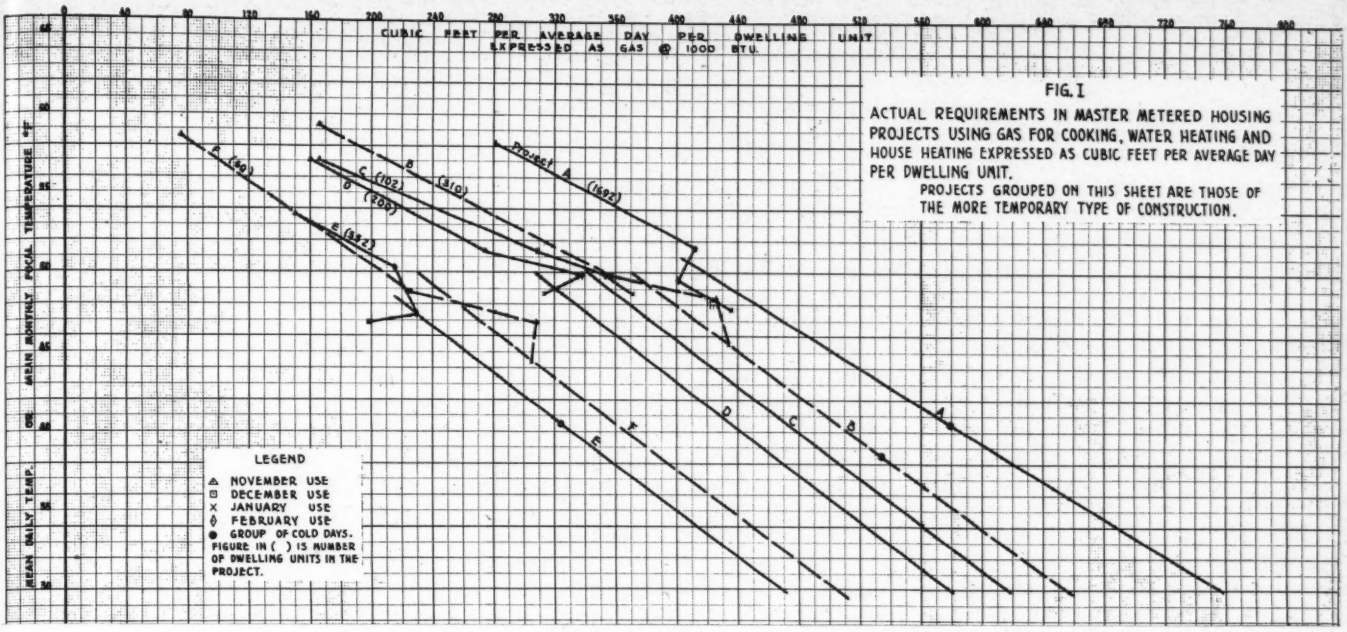

FIG. I

ACTUAL REQUIREMENTS IN MASTER METERED HOUSING PROJECTS USING GAS FOR COOKING, WATER HEATING AND HOUSE HEATING EXPRESSED AS CUBIC FEET PER AVERAGE DAY PER DWELLING UNIT.

PROJECTS GROUPED ON THIS SHEET ARE THOSE OF THE MORE TEMPORARY TYPE OF CONSTRUCTION.

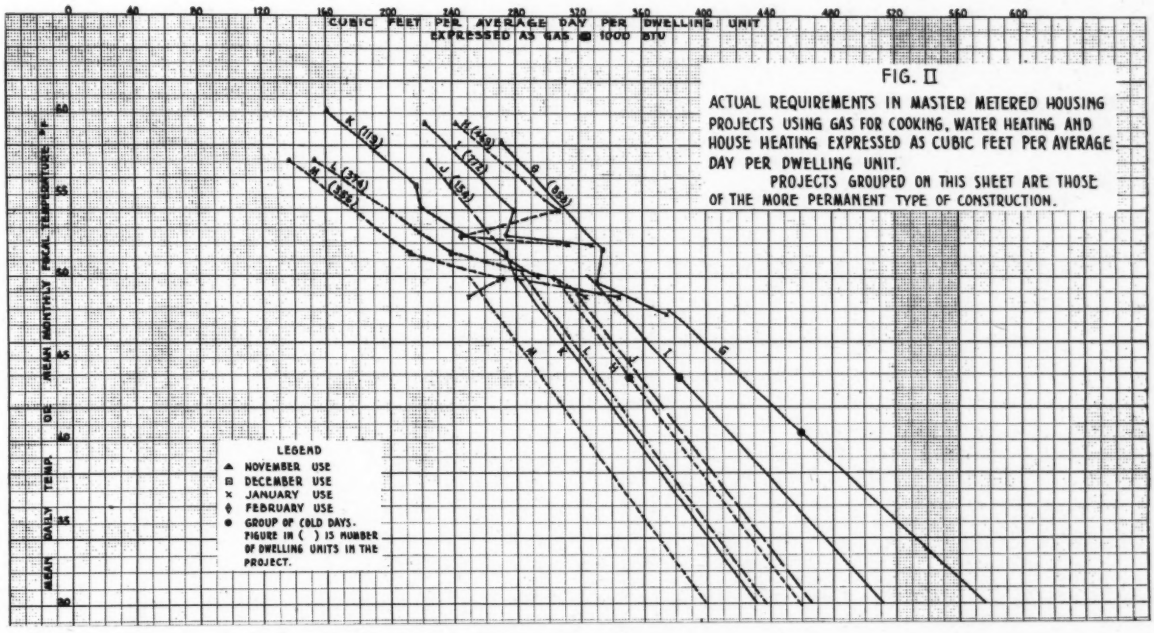

FIG. II

ACTUAL REQUIREMENTS IN MASTER METERED HOUSING PROJECTS USING GAS FOR COOKING, WATER HEATING AND HOUSE HEATING EXPRESSED AS CUBIC FEET PER AVERAGE DAY PER DWELLING UNIT.

PROJECTS GROUPED ON THIS SHEET ARE THOSE OF THE MORE PERMANENT TYPE OF CONSTRUCTION.

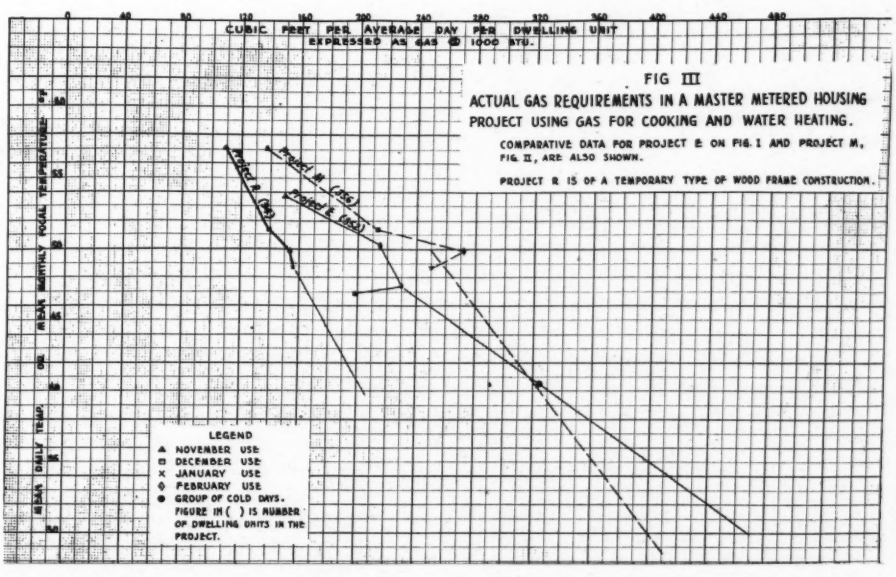
CUBIC FEET PER AVERAGE DAY PER DWELLING UNIT EXPRESSED AS GAS @ 1000 BTU.
MEAN DAILY FUEL TEMPERATURE °F
MEAN DAILY TEMP. 0°F
Project R (98)
Project M (255)
Project E (955)
LEGEND
NOVEMBER USE
DECEMBER USE
JANUARY USE
FEBRUARY USE
GROUP OF COLD DAYS.
FIGURE IN ( ) IS NUMBER OF DWELLING UNITS IN THE PROJECT.

FIG III

ACTUAL GAS REQUIREMENTS IN A MASTER METERED HOUSING PROJECT USING GAS FOR COOKING AND WATER HEATING.

COMPARATIVE DATA FOR PROJECT E ON FIG. I AND PROJECT M, FIG. II, ARE ALSO SHOWN.

PROJECT R IS OF A TEMPORARY TYPE OF WOOD FRAME CONSTRUCTION.

perature. The curve that averages the monthly points is not shown nor is the normal temperature that is effective during the winter months, as it is felt that they would needlessly confuse the plotted data. The monthly points for a given project are merely connected by straight lines to facilitate identification.

Fortunately, a sufficient number of projects had daily metering available to justify interpolating to obtain use versus temperature curves for those projects wherein no actual daily usage figures were available. By extrapolating the use versus temperature curves, the use per apartment on days of still lower mean temperature than did occur during the past winter can be determined.

Fig. 1 groups the temporary or emergency type of housing, and Fig. 2 groups those projects which in the main can be considered to represent the more permanent type of dwelling. A comparison of the curves on Figs. 1 and 2 indicates that a different slope in the use versus temperature curves is effective on each chart. The change in the use per apartment per degree of change in temperature is more gradual for the class of projects on Fig. 2 than those on Fig. 1. This relation seems reasonable, as the more permanent structures are more adequately insulated and heat losses should be less. It should be mentioned that the grouping on Figs. 1 and 2 was made on the basis of the slope pattern of the monthly use versus temperature points and not by the type of construction of the projects. As a result the grouping of the projects by class of construction, though legitimate, is not necessarily absolute.

Project Variation

The rather surprising fact shown on both charts is not how the use varies with temperature, but instead how the use per average dwelling can vary from project to project. The following tabulation lists the minimum and maximum requirements per apartment for a day of 30° F. mean temperature for the projects plotted on both Figs. 1 and 2:

	Minimum Use/Apt.	*Maximum Use/Apt.*
Fig. 1.....	470 cu. ft./day	757 cu. ft./day
Fig. 2.....	400 cu. ft./day	576 cu. ft./day

The use per apartment shows an overall variation of from 400 to 757 cu. ft. per day. It should be mentioned that neither the difference in the connected load per average dwelling unit in the various projects nor the effect of the number of apartments in a project on the use per average apartment in the given project can begin to account for the spread shown above (see Table 1 for connected load per apartment). Rather it is other factors, in the main intangible, that tend to set the average level of use in any one project.

One important criterion influencing the daily use per dwelling unit is the working hours of the average family in the project. Does this family work 8 to 5 or might members of the average family be working around the clock? The community wherein a project is located in some instances can account for a part of the variation in the requirements per dwelling unit. If the territory is generally rural as opposed to being urban, or if the project is contiguous to a defense plant in contrast to being near a military reservation should influence the home life of the typical tenant and in turn the hours the tenant spends at home should fix his gas use. The exact geographical location of each of several projects in any local area can be affected by weather to different degrees and thus show a different response when analyzed by the same temperature index.

The location of project A is on a rather elevated knoll that is entirely unprotected from winter winds and storms, and the local weather at the immediate site contributes in part to the high use obtaining in this project.

One other factor which does contribute to increased usage in the larger projects is that the use per dwelling unit is augmented by the requirements in miscellaneous buildings that are part of the community development. In project A, in addition to the dwelling apartments there is a school, firehouse, auditorium, casualty ward and maintenance building. The connected load in this group of buildings is included in totals shown in Table 1 and amounts to about 5% of the total per dwelling. For the other projects in this report, the amount of connected load other than in the dwelling units is smaller than in project A and can obviously be ignored.

The above considerations do not entirely explain the wide variation in the possible usage in this type of housing; they only suggest some of the contributing causes. It is perhaps enough to know that the requirements of the occupants of this type of dwelling can be as high as shown on Fig. 1.

Listed on Table 1 for projects shown on Figs. 1 and 2 is pertinent information on connected load, type of heating appliance and peak demand requirements in the average dwelling unit of the several projects. The estimated peak demands in the table are given for a day of 40° F. and 30° F. daily mean temperature as read from Figs. 1 and 2. These demands are expressed both as a daily and a peak hour requirement (a 6% peak hour was assumed). Also shown as part of the table is the design load (cubic feet per hour per apartment at 1000 Btu.) recommended by the WPB in section 340 of the Housing Utilities Standards of Aug. 25, 1942. These figures are included as part of the table, as they serve as a basis for comparing the design loads for housing projects with the actual loads experienced in projects that have been fully occupied through a winter season. It can be noted that many of the peak hour values as developed from the plotted data for a day of 30° F. mean temperature exceed the values proposed by the WPB housing standards. In northern California a temperature of 30° F. is considered to be a rational temperature base for the design and sizing of networks and line systems that must support a heating load. The values in table for 40° F. were included, as it is realized that 30° F. is perhaps too low a base temperature to be representative of minimum temperatures in other areas.

Cooking, Water Heating Curve

Curve R on Fig. 3 is for a housing development wherein gas is supplied for merely cooking and water heating. Project R is the only one of several projects in this section of California serving this type of load that had a 100% occupancy during the recent winter. It can be noted from the curve that there is a decided increase in use per dwelling as temperatures decrease. Curves E and M from Figs. 1 and 2 respectively are shown on Fig. 3 to afford a comparison of project R with those projects charted on Figs. 1 and 2.

It is unfortunate that more complete coverage of group housing developments with this type of load requirements was not available, as no particular ceiling on potential usage can be deduced from data presently available. Fig. 3 was compiled to show that the potentialities of oven heating are not being overlooked by the occupants of this class of housing projects, even though heating facilities employing other types of fuel are available.

■ ■

Gas in the South Pacific

A principal use for gas in the South Pacific war area is the operation of automobiles on "illuminating" gas, contained in a large bag attached to the car roof, according to Lieut. Col. W. W. Fitkin's recent "V" letter from somewhere in the South Pacific. Another type operates from charcoal burners made by Electrolux. Little use of gas for heating purposes was noted. Lieut. Col. Fitkin is a former commercial agent for Southern Counties Gas Co.

Increased Efficiency and Capacity

IN OIL GAS PRODUCTION

By C. H. WEBBER and A. L. KLEES

Tucson Gas, Electric Light & Power Company

THE DEVELOPMENT herewith described indicates a forward step in the production of peak load and stand-by gas for natural gas service, as well as adding to the industry's fund of information on oil cracking. The results of this winter's operation will be looked forward to with interest. Mr. Webber's paper was presented before the Technical Section of the Pacific Coast Gas Association at the 50th Annual Meeting in Los Angeles, Sept. 22-23.

THE process of generating a commercial fuel gas from petroleum, commonly referred to as the "Pacific Coast Method," was developed in California at a time when coal for gas generation had to be imported and shortly after the discovery of crude oil, which, because of high production, soon became a drug on the market and could be purchased as low as 10¢ per million Btu.'s. Naturally, the abundance of a cheap gas generating fuel did not justify the development of highly efficient oil gas generation, and the original method considered primarily low initial investment in apparatus, large capacity, and low labor costs.

Btu. recovery from make oil of 50% was considered good operation, especially when the by-products of tar and lampblack could be used for generating plant steam or conversion into a competitive fuel by briquetting. The original apparatus was patterned after the carburetor and superheater of the then successful carburetted water gas machine, with some minor changes. Later, the single shell generator was developed and found to give approximately the same operating results, with some saving in investment.

It was not until the period of the first world war, when oil prices skyrocketed, that any particular thought was given to increasing Btu. recovery from make oil. Even with improved operation the recovery was only increased some 5% to 8%. Unfortunately, the advent of natural gas forestalled further development, and the gas production engineer turned his efforts to developing a process to generate a high Btu. gas as a substitute for natural gas in the event of emergency. Again, efficiency was secondary, as the major problem was to generate large volumes of gas with only minor consideration to cost of production. However, it was demonstrated that, by generating such a high Btu. gas, the recovery increased in some cases to as high as 62% of the Btu.'s in the make oil.

The mechanics and chemistry of the existing practice in generating an oil gas are fairly simple. This is also true of the carburetting operation in water gas generation. Oil, when subjected to a temperature of from 1200° to 1800° F., will decompose into a commercial gas of a quality dependent upon the temperature to which it is subjected. Hence, a low Btu. gas will result from high temperatures and a high Btu. gas can be generated at the lower heats. Time of contact, or the length of time in which the gases remain in the hot zone, is not considered a vital factor, but the time of contact is usually for several seconds or more. It is probable that prolonged contact might result in further disintegration of valuable high Btu. gases into those of lower Btu. content, as well as conversion to solids. However, it is presumed that a certain length of exposure of the formed raw gases at a high temperature is necessary as a "fixing" process.

Maximum capacities of apparatus are usually determined by the maximum amount of oil that can be injected before such oil appears at the wash-box overflow or seal in an uncracked condition. In present oil gas generation this amounts to the equivalent of generating from 4 to 8 cu. ft. of gas per standard checkerbrick per hour.

Some two years ago the authors conceived the idea that recovery of Btu.'s in make oil might be materially increased if it were possible to subject the make oil to a higher temperature than that commonly in use and remove the resultant gases before further secondary decomposition takes place. It was assumed that the resulting gas would generally have the same constituents as a high Btu. gas, that increased recovery in gas Btu.'s would result because of the partial elimination of objectionable by-products, and

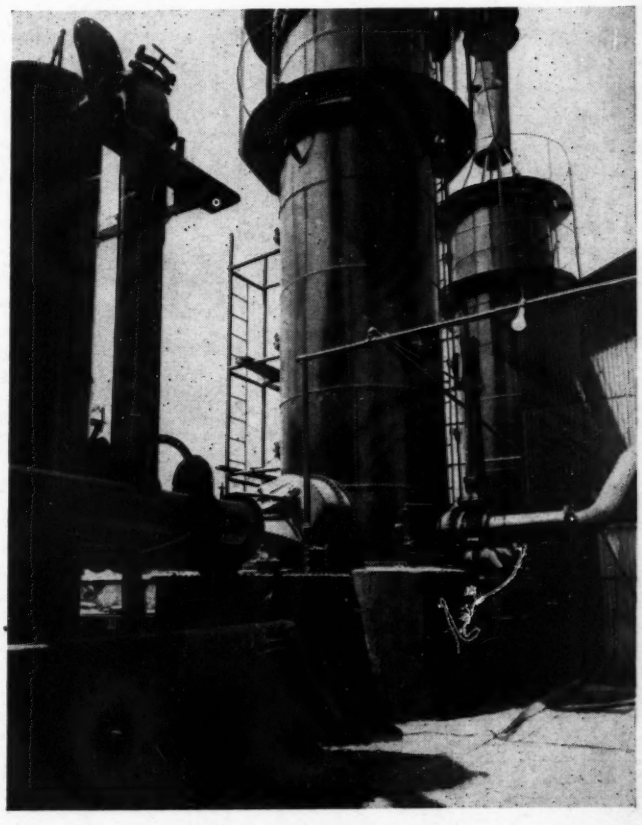

FIG. 1

Oil gas generator in which experiments were carried on. Operating house can be seen at left. Raw gas leaves bottom of generator and enters wash-box, thence to scrubbers. Seal can be seen in foreground.

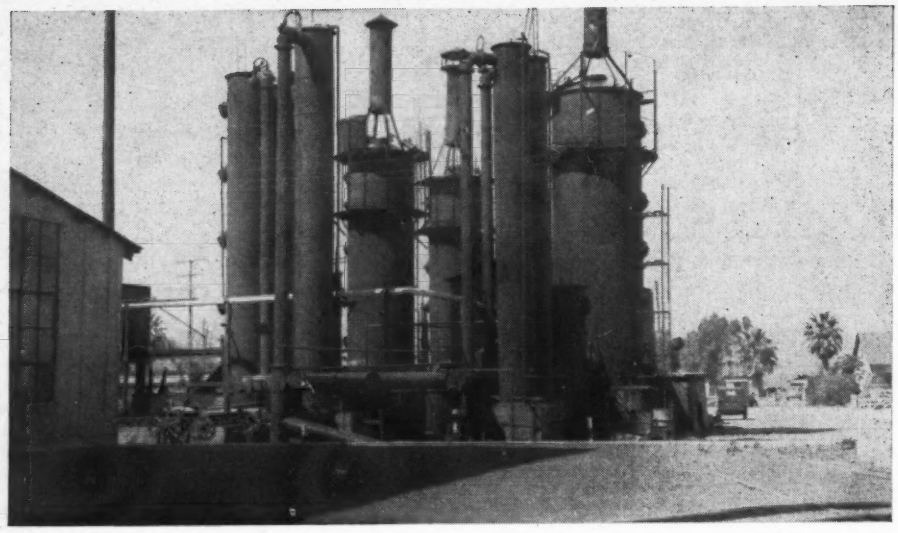

FIG. 2. Due to mild climatic conditions, generators and auxiliaries are installed out of doors. Experimental work was done in the 6 ft. 6 in. generator appearing in center.

that the higher temperatures carried in the apparatus plus rapidity of operation would also result in increased capacity per unit.

Considerable research and investigation have been done in an attempt to uncover all available data, particularly on the mechanics and chemistry involved. Very little information of a practical nature was found covering the relationship of time and temperature, other than certain tables, charts and statistics dealing primarily with laboratory experiments. With all procurable data analyzed, it was found that, except for certain specially designed apparatus for the recovery of specific gases such as acetylene and hydrogen, there was no record of any commercial oil gas generating process, where high temperatures and short contact were the controlling factors.

As oil gas generating apparatus was available at Tucson, Ariz., it was decided to run some experimental tests to determine the correctness of our theories. This apparatus was formerly used to generate a 500 Btu. gas before the advent of natural gas. The generator selected was a single up-shot type, containing 1750 standard checkerbrick and having a capacity of 15 Mcf. per hour. Make oil was injected at the rate of 5 gal. per minute. The checkerbrick were removed and replaced in various numbers in such a manner that flue area was greatly reduced. Incidentally, such placing of checkerbrick is unorthodox and under low temperatures and long contact operation would doubtless cause carbon stoppage trouble.

Oil used was a 38 gravity B. distillate, having a Btu. content of 138,000 per gal. The reason for using such an oil was because of its low sulphur content and, as purifiers had been dismantled, no purification was available. As we intended to distribute the gas to our system, we reasoned that, if it was mixed with natural in the proportion of less than one-third to two-thirds natural, the hydrogen-sulphide in the gas would be diluted to the point where its presence would not be objectionable, particularly considering the short periods of time when it would be necessary to distribute such a mixture.

The temperature of the generator was raised to 2400° F. Oil at the start was injected at the rate of 15 gal. per minute, which was increased to a maximum of 20 gal. Gas generated at the rate of 15 gal. of oil per minute was low in Btu. value (750), and the by-products were a fluffy lampblack, and pitch. Considerable naphthalene was apparent at scrubber clean-outs. Btu. recovery from make oil was 72%. When the rate of oil injection was increased to 20 gal. per minute, the resultant gas had a Btu. value of from 900 to 1000 per cu. ft. The by-products consisted of a very small amount of lampblack and some light tar. No naphthalene was apparent. Capacity per hour was 28 Mcf. with 780 checkerbrick. Btu. recovery increased to 85%. Thirteen different tests were run, involving the generating of a total of 865,000 cu. ft. Different rates of oil injection and temperatures were tried out, the lowest oil injection being at the rate of 7.74 gal. per minute, and initial temperatures ranging from 2000 to 2450° F.

Analysis of High Btu. Gas Made From 38 Gravity B. Distillate

Carbon dioxide (CO_2)	.1%
Unsaturants (C_nH2_n)	18.8%
Hydrogen (H_2)	36.5%
Oxygen (O_2)	1.9%
Carbon monoxide (Co)	2.4%
Methane (CH_4)	31.6%
Ethane (C_2H_6)	1.5%
Nitrogen (N_2)	7.2%
Hydrogen sulphide (H_2S)	Present
	100.0%

Recorded Btu. by Thomas calorimeter: 950.

The foregoing results were the averages for a large number of runs, under varying conditions. During some of the daily runs much better spot results were obtained, indicating efficiencies of make oil conversion to gas of as high as 95%. In all cases it was determined that rate of fuel injection or time of contact had a direct relationship to Btu. recovery and that, if it had been possible with existing apparatus to further shorten the time of contact, still higher recoveries would have resulted. When 1750 checkerbrick were used, capacity increased to 40,000 cu. ft. per hour.

The success in attaining a high Btu. recovery from distillate led us to believe that corresponding results could be attained by using a residual fuel oil. Tests were run, using an 18 plus oil. A total of 50,000 cu. ft. of high Btu. gas was generated. It was found that the recovery in Btu.'s decreased approximately 8% with the use of this oil. Checkerbrick were removed for inspection after the tests were complete and no carbon deposits were found, indicating that any solids in the raw gas remained in suspension, due to the extreme turbulence and rapid exhausting to wash-box.

Time of contact varied from .7 to .38 seconds, dependent upon rate of oil injection. This interval is calculated on a finished gas, having a temperature of 80° F. and was figured from holder readings.

While we were satisfied that increasing temperature and shortening time of contact resulted in greatly increased Btu. recovery and increased capacity, we desired to ascertain more closely the relationship between these two conditions. A small pilot plant was constructed, following generally the design of the 6 ft. 6 in. generator, but containing only 94 checkerbrick. Naturally results would only be indicative, as the size was much too small to expect the high recovery. We determined from this pilot plant that there is a direct relationship between temperature and time of contact.

Tests were run in which no steam was injected during the make period, and where the recovery equaled that of the tests where steam was used. Tests were run, eliminating the purge, resulting in a higher Btu. gas but decreased volume. While no accurate check was made as to the amount of by-products, it was estimated that the total of the

tar, pitch and lampblack does not exceed 10 lb. per Mcf., and may be considerably less when further refinements are worked out.

High grade fire clay refractories, such as are used for heavy duty furnaces—in which the temperature of the combustion chamber is continuously, or for a major portion of the time above 2400° F.—can be secured at reasonable cost. As a maximum of 2400° seems to produce the best results, there should be no particular question as to using such refractories. While it is true that heat transfer during the make period will cause a differential of from 350° to 400° F., this should not materially affect the expected life of the checkerbrick.

In describing our findings and setting forth our conclusions, it is not our purpose at this time to submit detailed operating data and statistics. The fact that the generating plant at Tucson will probably be operated this coming winter to furnish a substitute for natural gas, due to expected shortage of supply, will allow us to definitely establish the merits of our process under continued commerical operation. Our experiments have been of a practical nature, and we feel that further research will result in added refinements.

A Cement Asbestos Pipe Coating

By R. J. DUMAS

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THE study covers a description of an outer pipe coating which has been developed in this state which differs, so far as the writer's reading reveals, from any other type in use elsewhere.

Prior to 1935 the standard type of coating consisted of bitumen, tar, pitch or a mixture of these materials. With this coating was always associated a hessian wrapping impregnated—more or less—with the coating material. Latterly these coatings were also rolled in coarse sand to give a tougher outer skin.

There were many defects. Despite the utmost care, the temperature of the bitumen could not be maintained at an even figure, and so portions of the coating material would be "burnt," and other portions uncooked. If the mixture were made so that, on cooling, it became hard so that it could stand up to handling, it also became brittle and cracked. The hessian wrapping was probably the greatest cause of the failure of the coating, as it never was thoroughly impregnated, and therefore rotted in a short time and broke down the texture of the coating.

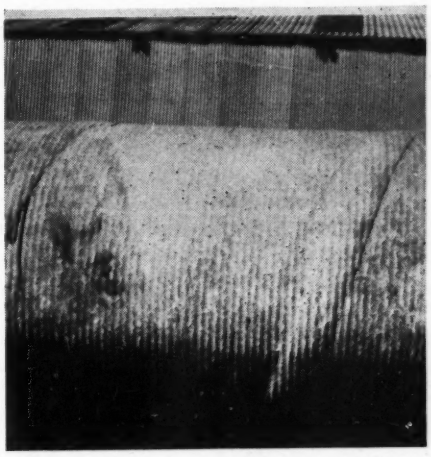
Do whatever one might, the coating would not stand up to the handling involved in transport from the factory to the trench and then laying in the ground. In the hot Australian summer, the coating would run, and the slings and rolling on the truck skids would break the surface. Repairs by the ironing gang covered up sods of grass, twigs and gravel and many similar harmful things. Assuming that the coating was perfect up to the actual laying in the trench, it could not be known what damage occurred to the coating on the bottom of the pipe.

Many tests also indicated that however perfect the laboratory samples might be, it was impossible to obtain 100% insulation over the whole surface of the pipe. In fact, as a safeguard against corrosion by electrolysis, probably more harm than good was done, as the effect was concentrated at a comparatively few unknown points.

Examination, by opening up a number of points on the various mains, indicated that in all classes of soil, from fine sand to heavy pug clay, the bitumen coatings of more than five years were "dead" or perished.

In 1935 an extensive main-laying program was commenced and, as it was realized that further expenditure on the usual coatings would only be a waste of money, it was decided to seek an alternative.

The practice of lining internally all-steel or cast-iron mains with a centrifugally spun cement-sand lining of 3/8 to 3/4 in. thickness had been followed for a number of years, and sample pipes removed showed no internal corrosion when the lining was broken out. In addition, the lining itself appeared to be quite unaffected in general appearance, and also when examined analytically.



Close-up view of coating.

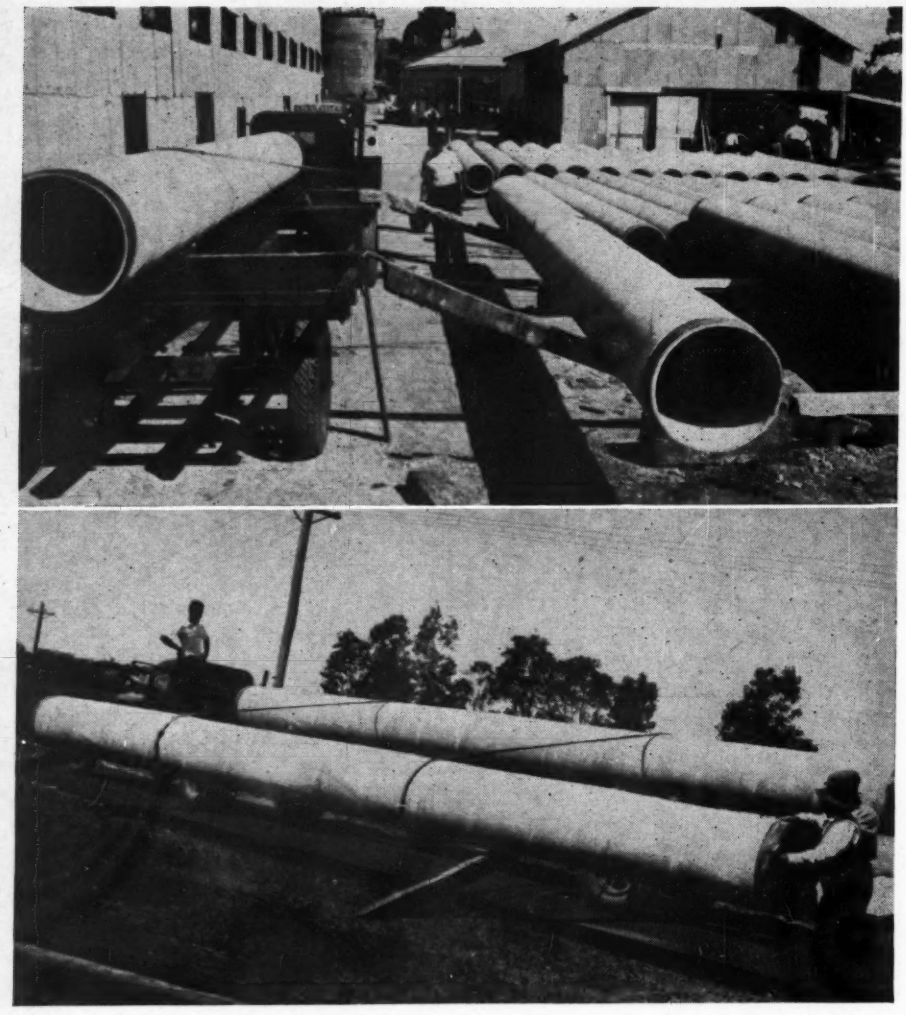
It was therefore rational to attempt to place a similar type of coating on the outside of the pipe. A good deal of experimental work was done but it was found impossible to obtain any coat which would remain on the pipe unless it was 3/4 to 1 in. in thickness and placed over chicken netting wrapped around the pipe. After standing some time this coating cracked badly. Handling, such as loading on to and off motor trucks, and the vibration due to carting, also caused serious damage to the coating.

Numerous methods of overcoming the troubles, such as the inclusion of asbestos fiber into the cement-sand material, were tried, but the ultimate conclusion was that this type of coating was not practicable.

With this problem on his mind, the writer was one day walking through the works of a company manufacturing cement asbestos pipes by a process in which the wet cement asbestos sheeting is wrapped on a collapsible steel mandril and is compressed, by means of a traveling wire rope coil under tension. The mandril is then collapsed and the outer shell remains intact, which, after curing, forms the cement asbestos pipe so well known to hydraulic undertakings. I had been through these works a number of times before, but it then suddenly came to me that the mandril represented the steel pipe, and the compressed sheets represented an outer coating.

Several lengths of 12-in. diameter steel pipes were made available for experimental purposes and were subjected to various tests, mostly of a physical nature, including subjection to varying temperatures ranging from maximum sun temperature to minimum local temperatures—approximately 32° F.

It was found that as the coating dried out it acted in much the same way—



Loading and unloading coated pipe.

though to a lesser degree—as the internal cement concrete lining on the inside of a steel pipe. If tapped with a light hammer, it was found that the coating in places had separated from the steel plate of the pipe. Numerous experiments were made with the idea of overcoming this. The plates were freed from all scale and various adhesive compounds such as silicate of soda, rubber emulsions, bitumastic paints and compounds were applied to the pipe, and the wrapping was put on over these. But in no case was the effect 100%, and the extra expenditure was not considered to be justified, as the separation was slight, and a similar condition with regard to the internal lining is not now held to be of any material consequence.

Tests were also made as to the insulating properties of the coating, but, as anticipated, these are poor. The writer does not regard this as detrimental as, wherever corrosion by electrolysis is likely, special intake and offtake points will have to be arranged and the main used quite frankly as a conductor, with a minimum of damage and a maximum of convenience.

Experiments also included varying thicknesses of coating, the laying on of the sheets in two or more layers, the winding of the sheets in similar or opposite directions of winding, the winding on of two layers with a bitumen filling between and various other alternatives. Results indicated that two layers—the sheets being wound spirally in opposite directions—gave the most effective coating. The cost, however, was materially greater than for a single spirally wound layer, which proved quite satisfactory, and this has been adopted as standard for ordinary purposes of the metropolitan water supply department.

Perth is a city of approximately 220,000 population and many miles of steel mains, from 42 to 8 in. diameter, have now been laid with the standard cement asbestos coating, with no trouble whatever so long as the limitations of this type of coating were recognized and complied with.

These limitations are:

1. The coatings should be kept moist during the curing period of 24 to 48 hours.

2. Transport of pipes from the factory should not commence until the coating had sufficiently hardened, generally 48 hours.

3. Pipes should be laid and buried within a limited time, depending on the size of the pipe and the season of the year.

In the summertime pipes of 30 to 42 in. diameter have to be laid within 9 days of coating, 30 to 15 in. diameter pipes may be delayed somewhat longer and 12 to 18 in. still longer. Unless buried within these periods the coating develops cracks which, particularly in the larger pipes, cause the coating to lift. If buried as set out, this cracking does not occur, as demonstrated by the fact that full pipe lengths have been opened up along various sections of the 42 and 30 in. diameter mains particularly and found to be in perfect condition—in some cases five years after laying. In one case, where the pipe was laid alongside a river and was subject to daily "wet" and "dry" due to tidal conditions, the coating was removed along a full pipe length. The steel below was totally unaffected with the original mill scale in position. This was four years after laying.

No Failure in First Pipe Laid

The first pipes were laid in 1935 and so far there has been no recording of any failure of the coating in any class of ground varying from heavy acid clay country to dry sand.

The coating material used is the ordinary fibrolite or cement-asbestos sheeting which is normally used for fibrolite corrugated roofing and for the well-known flat sheeting for house construction. The composition of the sheeting consists of a mixture of 1 of asbestos by weight to 8 of cement, to which is added sufficient water to form a thin slurry. The finished sheets are ¼ in. thick and weigh approximately 27 lb. per sq. yd. The sheet is taken in a plastic state from the machine on which it is formed, cut into strips 24 in. wide, and wrapped by hand around the pipe to be covered in a spiral. The pipe is kept slowly revolving during this process.

Before laying on the pipe the edges of the sheets are beveled with a wooden hand mawl, the face of which is patterned so that the surface of the bevel is roughened. This insures that as each new sheet is joined on to the length already placed on the pipe, a good bond is effected between the two sheets, the beveled edges being hammered together along the line of the joint.

For steel pipes which are to be weld-

ed together, a length at each end of approximately 3 in. is left uncovered, the waste ends of the sheets being cut off and used in the factory for odd purposes.

The coated pipe is then wrapped with calico sheeting. Four turns of ½ in. diameter steel wire rope are then wound round one end of the pipe and these are made to compress the coating by means of attached weights varying from 1½ cwt. for 24 in. diameter pipes to 2 cwt. for 30 in. diameter pipes. The pipe is turned with a peripheral speed of 280 ft. per minute, and the steel rope coil is made to move longitudinally at a rate of 1¾ to 2 feet per minute.

The compression of the steel wire coil not only forces out the excess moisture from the coating material but presses the sheeting on to the steel plate of the pipe, and bonds thoroughly the joints between the bevel edges of the individual sheets making up the coating.

The pipes are made in 20 to 28 ft. lengths, and are loaded on to and off motor lorries and trailers along timber skids. No protection other than ordinary wooden wedges is provided on the motor truck, and the pipes are rolled over macadam roads, curbs, etc., without the slightest damage. Except in a few rare cases where a pipe was dropped from the lorry, no expenditure whatever was incurred in repair to the coating between the time of leaving the factory and laying of the pipe in the trench. This statement covers the laying of more than 100 miles of varying size steel mains. As explained, to enable the butt welding of the pipes to be completed, a short length at each end of the pipe is left uncoated. After the pipe is laid in the trench this uncoated gap, about 6 in. wide, is coated by hand with a plastic mixture of asbestos and cement supplied by the company which manufactures the sheets used for the coating. To enable the mixture to stick, the plate is first painted with a bituminous compound such as colas. The mixture is then thrown on as if lagging a boiler, the surface is troweled and a wrapping of hessian is fixed by two wire twitches to protect this joint coating during backfilling.

The accompanying photographs indicate the general appearance of the coating and methods of handling the pipes.

■ ■

Compressor Contract Let

Federal license has been granted to the B. C. Electric Railway Co. to erect a compressor house at the gas plant at 140 Keefer St., Vancouver, B. C., at a cost of $5500. Contract has been placed with Hodgson, King & Marble.

Underground Gasification of Coal

THE UNDERGROUND gasification of coal is a subject that will hold increasing attention in the future. Perhaps the time is not too far distant when fuel produced in this manner will be available to sections in the United States not now served by natural gas. The article herewith published was written by H. ROSE and presented as a lecture before the Northwest District of the British Gas Association in May of this year. The paper first appeared in "The Gas Times," published in England in the issue of June 5, 1943.—Editor.

THE idea of converting coal to gas in the seam is not new. The possibility was first mentioned by the Russian chemist, Mendeleev, in 1888, and somewhat later by Sir William Ramsey in this country. Although the idea attracted a certain amount of attention in other countries, little practical work was carried out beyond the laboratory stage. In fact, no country took the matter seriously until Lenin, attracted by the project outlined in the British Press in 1913, coupled the problem with the plan for electrifying the U.S.S.R. The Soviet authorities were immediately attracted to the advantages which the scheme offered.

By utilizing poor seams of low quality coal, which were uneconomical or impractical to work, their potential coal reserves could be increased enormously. The reduction in the transport of coal over long distances would be a great advantage to such a vast country as Russia, where fuel supply has to be transported over hundreds of miles as a matter of course. The elimination of underground mining would provide cheaper fuel and power, which would, in turn, influence all industrial activities. The provision of low cost gas as a possible source of raw materials for the production of synthetic fuels and chemicals offers an additional attraction, and not the least important is the enormous amount of arduous human labor which would be saved, resulting in benefits to society as a whole.

Experiments on single shafts were first carried out in 1933 in the Donetz basin, and gradually the work extended to experimental stations, first built in 1937; finally, in 1940, the first industrial station was opened in the Moscow basin. The third five year plan, 1938-1942, incorporates a project for the construction of several new plants in the Donetz and Moscow coalfields, in the Urals, Eastern Siberia, in Central Asia and the Far East. Provision is made in the plan for the building of two stations where the control of the plant is carried out automatically in a central control room.

To give some idea of the size of these industrial plants, the projected station at Lisichansk, in the Donetz, was expected to have a daily output of 20,000,000 cu. ft. of gas, with an average calorific value of 275 Btu. per cu. ft. Two other stations, with a daily output of 14,000,000 and 8,000,000 cu. ft. respectively, are included in the project.

In the first experiments, the seam was converted into a number of underground gas producers, by first reducing one or more panels to fragments before ignition. This method, however, was found to be unsatisfactory, and was abandoned in favour of methods which reduce underground mining operations to the minimum.

There are at least three methods available, each of which is applicable to a particular type of seam, the deciding factors usually being the inclination and depth of the seam.

Stream Method: This is perhaps the most successful and firmly established of all methods and is particularly suited to steeply inclined seams. A gallery, which acts as the first shaft, is driven along the seam and two shafts some 200 to 300 yd. apart are taken upwards along the seam to the surface. The coal is ignited and combustion maintained by blowing compressed air down one shaft, the combustible gas being tapped off at the second shaft. In this way, the fire burns progressively upwards along the seam to the surface. Starting-up usually takes from 2 to 10 hr., after which gas is produced continuously without further attention.

At one experimental station in the Donbas, working on a 6 ft. thick seam, inclined at an angle of 75°, gas was produced without interruption for 18 months, during which time 250,000,000 cu. ft. of power gas and 70,000,000 cu. ft. of synthetic gas were produced.

Filtration Method: This method is used for horizontal seams and requires no preliminary underground mining operations. A number of bore holes, reaching to the seam, are arranged in concentric circles, and air is pumped down through the centre boring, the gas being withdrawn from the bore holes of the first ring. When the gasi-

fication of this section is complete, the air is then pumped down the first ring of borings and the gas withdrawn from the next concentric ring. The bore holes are inter-connected, so that the gas underground passes through cracks and crevices from one bore hole to those adjacent to it.

Bore Holes and Drilling Method: This virtually is a combination of the previous two methods and is considered suitable for gently sloping seams. If a low grade coal is used, the air may be enriched with oxygen, or, if steam is added to the blast, a semi-water gas is obtained.

Some of the gas penetrates into faults in the seam and to the surrounding rock. This gas may be recovered by discontinuing the air blow whilst the gas is being pumped off. A gas rich in hydrogen is obtained in this way, which is eminently suitable for the production of synthetic fuels and chemicals.

The process can be divided into two cycles. During the air blow, power gas with a calorific value of 115 Btu. per cu. ft. is obtained, while during the blow-off period a synthesis gas is obtained with a calorific value ranging from 170 to 220 Btu., and with a hydrogen content which might reach 55%. If the air blow is enriched with oxygen up to 25%, these calorific values may be increased by 50% or more.

Judging from the considerable amount of expenditure on research and development in the U.S.S.R., and from the results published, it would appear that, although major technical problems yet remain to be solved, the teething troubles are over and the underground gasification of coal may be considered as an established fact.

Most of the published results are based on the operations of the large experimental station at Gorlovka, in the Donetz, and some of these are worthy of study. Whereas the monthly output of each miner in this basin is 30 tons a month, the output of each operator at the underground gas station, in terms of coal equivalent, is 75 tons; thus, the productivity of each operative is more than doubled. If this figure can be achieved at an experimental station, it has been estimated that a large industrial station can increase the output per operator by 12 to 15 times as compared with conventional mining methods.

Since 80 to 90% of the fixed capital goes into surface work, and the remainder into the preparation of the panel, there is a considerable saving in the cost of operation, which has, in fact, already led to a reduction of the cost of power gas to one third of its usual cost.

Future Possibilities

The possibilities that present themselves are great. In the first place, shallow seams and poor deposits of coal, which cannot be profitably worked by conventional mining methods, could be successfully dealt with by underground gasification.

The gas plant, now transferred to the pithead—thus saving the enormous labour of hewing and transporting coal over long distances—could distribute low cost gas to industry, which might be handled through a regional scheme, along the lines of a gas grid. Alternatively, a gas turbine may generate cheap power on the site.

The Kharkov Mechanical Engineering Institute has, in fact, brought out the first industrial gas turbine which will operate exclusively on underground gas. The power generated can be linked up with the existing grid and will incidentally supply the requirements of the station itself and the industries centred around the station, using as raw materials the products of gasification. For it is in this direction—the utilization of the synthesis gas for the production of industrial fuels and chemicals—that the process offers so much promise.

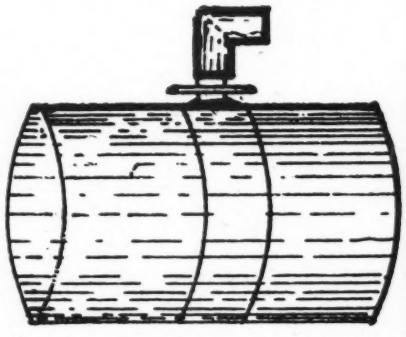
The gas produced provides the basic raw material for the synthetic production of a number of key industrial chemicals, benzene, phenol, methyl alcohol and ammonia, and, from these, motor spirit, synthetic resins for the manufacture of plastics, synthetic rubber, organic solvents, nitric acid and related chemical compounds, normally obtainable from coal by-products.

We can envisage the possibility of replacing the monstrous slag heaps at the pit head by highly mechanized gas stations, coupled with thermo-electric and electro-chemical enterprises, running on cheap power, together with a group of synthetic chemical industries, the whole forming one integral unit running entirely on the gas generated from the seam, without a human hand having to touch the raw coal. The installation of such centralized industrial combines is bound to have a marked effect on industry as a whole by stimulating new industries and by the lowering of the costs of production.

The gas industry might well take the trouble to investigate the possibiity of gasifying coal underground in this country. The technicians we have: what we require is foresight, and the establishment of adequate funds to finance the necessary scientific research.

Extinguishing Fires on Gas Services

A SIMPLE yet effective device has been produced by A. G. R. Kennett, district superintendent of the Isle of Thanet Gas Co. for extinguishing fires on service pipes up to and including 2 in. in diameter. This has been tried out in practice and found successful.



The device consists of a sheet metal cylinder 4 in. in diameter, 6 in. long, one end closed, while a swivel joint and lock nut fixed to a band encircling the cylinder enables the user to place himself in any convenient position and distance from the fire by screwing the device to a length of ordinary ⅜-in. gas tubing.

In the case of a fire on a service pipe which is exposed, the cylinder (half filled with wet clay) can be used in the hand by quickly placing the device over the end of the pipe; it acts in the same way as the old-fashioned candle snuffer. This is much better and quicker than applying clay with a spade.

Experience has shown that service pipes may be fractured and ignited in cellars, basements and under fallen timber; fire fighting is then made difficult and the fire is likely to spread.

This situation can be overcome by the use of the device attached to a length of tubing, as it can be worked through the debris to the seat of the fire and so prevent a serious conflagration. It is a most useful addition to the kit of gas repair squads, and owing to its simplicity could be used by members of the civil defense and NFS.

The device could be made up by any undertaking from short ends of 4-in. galvanized flue pipe, a suitable length of 1-in. by ⅛-in. strap iron, ⅜-in. nipple, BSP thread, ⅜-in. elbow, BSP thread, and a ⅜-in. winged back nut, BSP thread. First make cap and close one end of a 6-in. length of flue pipe; with the strap iron make a band to fit outside of cylinder and weld to secure; weld ⅜-in. long thread nipple to the band, screw on winged back nut and elbow and paint to prevent rusting. The attached drawing shows the complete device.

Infra Red For Industrial Purposes

FOR many years the gas industry has made use of radiant heating where high rates of heat transfer have been required. Processes such as fur drying, sealing wax polishing, printing ink drying, and of course the grilling of meat and bread toasting have been carried out by this means. As an illustration, Fig. 1 shows a diagram of a radiant heat drying system for processing paper installed 15 years ago.

In recent months the technical press has contained much information on radiation drying under the title of "Infra Red," with the result that many people may have been led to believe that infra red rays generated by electrical means have unique properties which revolutionize heating processes in general and paint drying in particular. In fact, infra red is none other than radiant heating, though in the normal electrical application it has been limited to a range of infra red rays emitted by the tungsten filament lamp which fall in a comparatively narrow range of the radiant heat spectra.

The gas industry is fully aware of the uses of infra red heating and in the available radiant heat source the industry is particularly fortunate in having the experience of many years of practical application and research.

The sources available are:

(1) High temperature panels, such as the Cox (surface) combustor, and the gas fire type.

(2) Medium temperature panels, of the type commonly employed for space heating.

The high temperature panels give a very high flux density, normally of the order of 350 Btu./hr. per sq. in. (equivalent to 100 w. per sq. in.), compared with the maximum of 35 Btu./hr. per sq. in. (equivalent to 10 w. per sq. in.) of the tungsten filament lamp; while the medium temperature panels can be adjusted to give flux densities up to 35 Btu./hr. per sq. in. (equivalent to 10 w. per sq. in.) as required.

Both types have the advantage of uniform radiation without the use of reflectors, they are of the simplest form of construction, very robust, require very little maintenance, and have an operating life of many years. Owing to the simplicity of their construction, their initial cost is low and they require no special installation features other than the normal supplies.

There are no patents or registered designs on this development, and in accordance with the Gas Light & Coke Co.'s usual policy, it is prepared to make any information available to the recognized industrial oven builders and the manufacturers of industrial gas equipment, also paint manufacturers. It is recognized that from the practical and commercial point of view many improvements in design and appearance can be made.

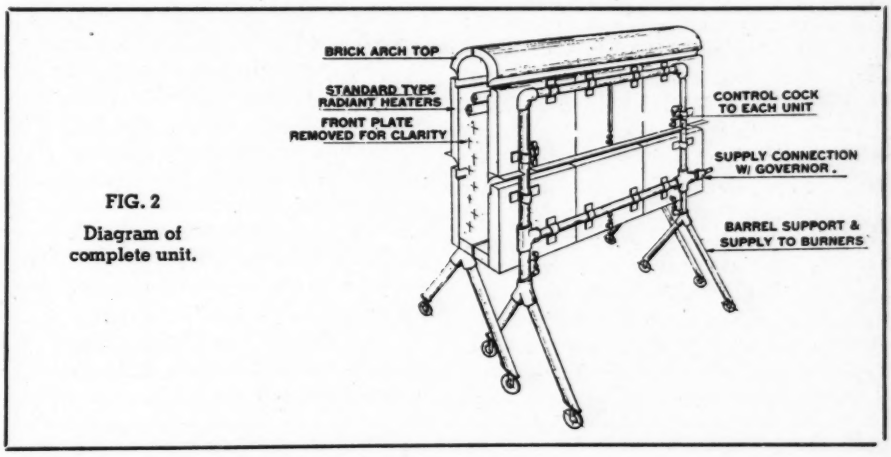

BRICK ARCH TOP
STANDARD TYPE RADIANT HEATERS
FRONT PLATE REMOVED FOR CLARITY
CONTROL COCK TO EACH UNIT
SUPPLY CONNECTION W/ GOVERNOR.
BARREL SUPPORT & SUPPLY TO BURNERS

FIG. 2

Diagram of complete unit.

Research by the Gas Light & Coke Co. at Watson House on the use of infra red has resulted in the development of special heaters for many industrial purposes, and recently attention has been directed to the special problem of curing the heat transformable paints used for protecting sheet metal objects.

Experimental large medium temperature panels can be built up into tunnels of any desired length for this type of work. The results obtained have confirmed earlier experience, and it has been shown that paints requiring 25-30 min. at 250° F. in a converter oven can be dried in about half a minute in this tunnel. It is interesting to note that the air temperature in the tunnel is only 15° C. higher than atmospheric.

The use of high temperature sources for the drying of paint on heavy objects such as shells has been developed since the war by a well-known manufacturer of drying ovens; unfortunately, little publicity has been given to these installations and it is unlikely that detailed particulars could be broadcast in war time. Full information would, however, be available to anyone engaged on essential work.

The use of infra red for purposes other than paint drying has also made considerable progress, since the gas high temperature panels, of which several proprietary types are available, has the great advantage of high flux densities enabling soldering and brazing operations to be carried out on mass production lines.

One interesting development investigated by the Gas Light & Coke Co. is the heating by means of high temperature panels of acids flowing in glass tubes. Fig. 5 shows a diagram of this completed unit. The panels are mounted on a movable framework, which can be wheeled into any position and gives free access to the tubes if required.

Many more applications can be quoted, but these are sufficient to show that research by the gas industry on this problem to help the war effort has not been lacking.

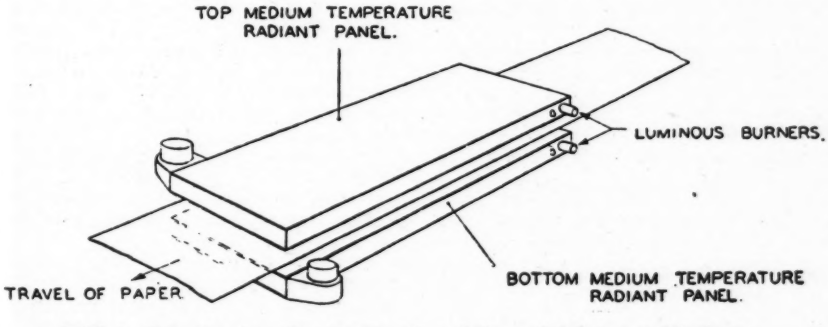


FIG. 1. Diagram of application of radiant (infra red) heating to ink drying.

*Reprinted from *Gas Times*, May 29, 1943, issue.

FPC Approves 1228-Mile Natural Gas Line

FOR the construction and operation of Tennessee Gas & Transmission Co.'s (Chattanooga, Tenn) new 1228-mile natural gas pipeline, the Federal Power Commission has announced its issuance Sept. 25 of a certificate of public convenience and necessity. The line, from a point near Corpus Christi, Texas, to a point near Charleston, W. Va., is to increase natural gas supplies in the Appalachian area for the war effort and for post-war demands.

The commission's order provides that Tennessee must begin construction before Feb. 1, 1944, and proceed with due diligence to complete it in time for operation during the winter of 1944-1945. This provision was incorporated in the light of WPB's decision that a new line to augment natural gas supply into the Appalachian area must be built as an essential part of the war program and must be completed in time for operation next winter in order to prevent interruption to war production that would otherwise occur. Pursuant to this decision, WPB stipulated that firm rated orders for pipe must be placed not later than Oct. 1, 1943, so that materials may be made available commencing the fourth quarter of this year.

Course of Line: Tennessee proposes to construct and operate a 24-in. natural gas pipeline 1156 miles in length originating at Driscoll, near Corpus Christi, Texas, and extending in a general northeasterly direction through Louisiana, Mississippi, Tennessee and Kentucky to Kenova, W. Va. In addition, and at the suggestion of the WPB, Tennessee proposes to construct an 18-in. line 72 miles in length from Kenova to the Cornwell compressor station of the Hope Natural Gas Co. near Charleston, W. Va.

The proposed initial compressor installation for the entire project is 58,000 hp., located at five stations having 10 1000-hp. units each and one station with eight 1000-hp. units. The initial delivery capacity of the line is 207,000,000 cu. ft. per day, of which Tennessee anticipates deliveries of 40,000,000 at Kenova and 167,000,000 at Cornwell station.

Financing: In the issuance of its opinion No. 93-A, the commission finds that the present contract between the Chicago Corp. and Tennessee constitutes substantial compliance with the commission's requirement in its July 5, 1943, opinion (No. 93) that Tennessee must make a showing of firm commitments with respect to financing the new pipeline in order to obtain a certificate, but points out that the exact character, nature and amount of the securities finally to be issued have not been determined.

> "We therefore impose as a condition to the issuance of the certificate," Opinion No. 93-A states, "that applicant submit to this commission for approval such final plan, including all agreements in connection therewith, a description of the character and the nature of the securities to be issued, the cost of money, and the consideration to be received for the securities. Both the applicant and the Chicago Corp. recognize the propriety of such condition."

The contract between Chicago and Tennessee provides among other things that Chicago will purchase or cause to be purchased applicant's securities for cash in aggregate amount sufficient to construct and complete the pipeline project in operating condition. It is agreed that Chicago will acquire, either alone or in conjunction with others, securities of Tennessee evidencing, directly or indirectly, 90% of the voting power and equity ownership of Tennessee.

Coal Operators Intervene: The opinion announced Sept. 25 notes that interveners representing coal operators, labor unions and railroads, having a vital stake in the coal industry in the Appalachian area, opposed the granting of a certificate for the new pipeline during the proceeding, principally on the ground that the present and future fuel needs of the area can be adequately met by coal. The interveners also contended that the use of natural gas for industrial and space-heating purposes constitutes a dissipation of natural gas resources and threatens the coal industry with ruinous competition. In commenting upon the considerable evidence adduced by these interveners in support of their contentions, the commission says:

> "We recognize the force of these arguments and are not unmindful of the economic and social aspects of the problem posed by these interveners. We are not authorized, however, to regulate rates for natural gas sold directly to industrial consumers, which class of gas sales furnishes the keenest competition to the coal industry. Nor does our power to suspend rates extend to direct sales of natural gas for industrial purposes. It appears, therefore, that the Natural Gas Act does not vest this commission with complete and comprehensive authority which would permit us to act as arbiter over the end uses of natural gas.
>
> "The evidence does not appear to establish clearly," the opinion continues, "the ability of the coal industry under existing conditions to meet the additional fuel needs for war. Moreover, on Sept. 18, 1943, the Solid Fuels Administrator for War announced that 'coal production has been unable to keep pace with the expansion of war requirements,' and declared that 'there is a far better chance that the situation will grow worse before it grows better, because the coal industry faces strict limitations despite any efforts which can be made to raise production levels.' "

Gas Reserves Adequate: Tennessee has made a satisfactory showing that it has firm commitments for an adequate supply of natural gas for the new line, as required by the commission in its July 5 opinion.

The source of gas supply for the project is the Stratton-Agua Dulce field in Nueces, Jim Wells and Kleberg counties, Texas, which has gas reserves estimated at approximately three trillion cu. ft. and a present annual demand of not more than 30,000,000,000 cu. ft.

The Chicago Corp. owns or controls more than two trillion cu. ft. of recoverable gas reserves in this field which are available for the new line, the opinion says, and in addition the owner of one trillion cu. ft. of gas located in the vicinity of Edinburgh, Texas, has agreed to enter into a contract to sell gas to Tennessee Gas & Transmission Co. Existing reserves of the Chicago Corp., the opinion continues, will have a life of at least 33 years based on annual withdrawals at the rate of 75% of the initial pipeline capacity.

Tennessee has entered into a firm contract with the Chicago Corp. providing for deliveries into the new line of up to 207,000,000 cu. ft. of natural gas per day over a period of 25 years. An agreement between Chicago and the Manufacturers Light & Heat Co. contemplates deliveries of from 50,000,000 to 100,000,000 cu. ft. of such gas for the use of the Columbia Gas & Electric System through the new line at a point in the Appalachian area.

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Well-Spacing Pattern Amended in Michigan

Greater development of oil fields in 12 southwestern Michigan counties will be possible as a result of an order issued Oct. 2 by Petroleum Administrator for War Harold L. Ickes.

In an amendment to a formal order (Supplementary Order No. 7, amended, to Petroleum Administrative Order No. 11), closer oil well spacing patterns are permitted with a view to increasing the number of producing wells in that section.

The administrator said that the action was taken to provide additional production capacity close to the important refining, industrial and consuming centers of the Middle West.

He also pointed out that under the closer spacing provisions of the amended order, operators will find it easier to develop their oil properties, since the producing formations in southern Michigan are in most instances irregular.

ASSOCIATIONS

War and Peace Problems Top PCGA Program

CONCERNED primarily with present-day war problems with emphasis on the post-war era when peace production will start, the Fiftieth Annual Meeting of the Pacific Coast Gas Association, held Sept. 22 and 23 at the Amabssador Hotel, Los Angeles, under the direction of F. M. Banks, president, was memorable for timely discussions vital to the industry now and in the years to come.

More than 600 gas men attended, many of whom traveled long distances to present important messages. Among these were Col. W. F. Rockwell, president, and H. Leigh Whitelaw, managing director of AGAEM; C. V. Sorenson, supervisor of new business of the Northern Indiana Public Service Co.; Louis Ruthenburg, president of Servel, Inc.; Major Gen. Walker K. Wilson, commanding general, Northern Calfornia Sector, Western Defense Command; and Carl Sorby, vice president of Geo. D. Roper Corp.

At the general luncheon, held in the Cocoanut Grove Wednesday noon, A. F. Bridge, president, American Gas Association and vice president and general manager, Southern Counties Gas Co., discussed the gas industry at war. "Like the railroads, the natural gas industry has devoted money and effort to 'unselling' the public on the merits and service of its commodity, but has been glad to do so in furtherance of its loyalty to national aims and requirements," he said. "This is an outstanding example of cooperative self-regulation of which we may justifiably be proud," he added.

After chronicling some of the myriad activities of the industry in war work, Mr. Bridge stated that "if it were not for this war work it probably would be impossible to retain during the critical period even the nucleus of the (American Gas Association) laboratories' organizations—a group of experts built up over many years and which will be more essential than ever for industry progress after the war."

In speaking on "The Fifth Freedom" (industrial democracy) at the general session conducted at the Ambassador Theater on Thursday morning, Louis Ruthenburg, president, Indiana State Chamber of Commerce, and state chairman of the Committee on Economic Development; president, Servel, Inc., expressed faith in the merits of industry and business management's planning, and contrasted it with the "planless planning" of Washington bureaucrats. "They (business and industrial leaders) discuss a kind of planning quite different from that of the National Resources Planning Board," he said. "Their plans do not originate from academic deliberations of left-wing altruists in the hire of the federal government.

"Businessmen once more are resuming the kind of planning which brought supremacy to America . . . in preparation for meeting the challenges that will follow industry's 'mustering out of war production.' The result was formation of the Committee for Economic Development."

American business, Mr. Ruthenburg said, "has played the role of guinea pig to all manner of bureaucrats whose objectives seem to be a confused complex. Some of them seem to be primarily interested in social reform; others in social revolution.

"We are all familiar with the sordid chapter in labor relationships under which certain privileged racketeers, parading as 'labor leaders,' have resorted to violent coercion and intimidation of their victims. When workmen are required to pay exorbitant fees before they are permitted to help make the implements of war, when they are forced to comply with closed-shop contracts and the check-off of union dues, their

WHO'S WHO IN THE ASSOCIATION—1943-44

Officers

President: E. L. Payne, vice president and general manager, Payne Furnace & Supply Co., Beverly Hills.

Vice President: O. R. Doerr, general sales manager, Pacific Gas & Electric Co., San Francisco.

Treasurer: D. G. Martin, general auditor, Pacific Gas & Electric Co., San Francisco.

Directors: F. M. Banks, vice president in charge of sales, Southern California Gas Co.; R. G. Barnett, vice president and general manager, Portland Gas & Coke Co.; E. H. Coe, president, Central Arizona Light & Power Co.; F. F. Doyle, manager natural gas division, Pacific Gas & Electric Co.; H. W. Edmund, vice president and general manager, Coast Counties Gas & Electric Co.; W. J. McCoy, comptroller and treasurer, Southern Counties Gas Co.; D. H. Perkins, superintendent, gas department, San Diego Gas & Electric Co.; A. H. Sutton, president, Mission Water Heater Co.; F. A. Woodworth, president, Spokane Gas & Fuel Co.

Manufacturers Section

General Chairman: A. H. Sutton, Mission Water Heater Co.

General Vice Chairman: E. T. Howard, General Controls Co.

Accessories Division: Chairman, J. J. Delaney, Reliance Regulator Corp.; vice chairman, J. E. O'Hagan, Grayson Heat Control, Ltd.

Heating Division: Chairman, F. C. Packer, Payne Furnace & Supply Co.; vice chairman, C. A. Gabriel, Monarch Heating Co.

Range Division: Chairman, Henry Honer, Western Stove Co.; vice chairman, H. W. Jackson, Jas. Graham Mfg. Co.

Water Heater Division: Chairman, E. S. Hoyt, Jr., Hoyt Heater Co.; vice chairman, R. W. Tarleton, Southern Heater Co.

AGAEM Directors: A. H. Sutton and E. T. Howard; alternates, F. C. Packer and Henry Honer.

Section and Committee Chairmen

Accounting Section: Harry McGann, Pacific Gas & Electric Co., San Francisco.

Sales and Advertising Section: R. J. Phillips, San Diego Gas & Electric Co., San Diego.

Technical Section: Elting Henderson, Southern California Gas Co., Los Angeles.

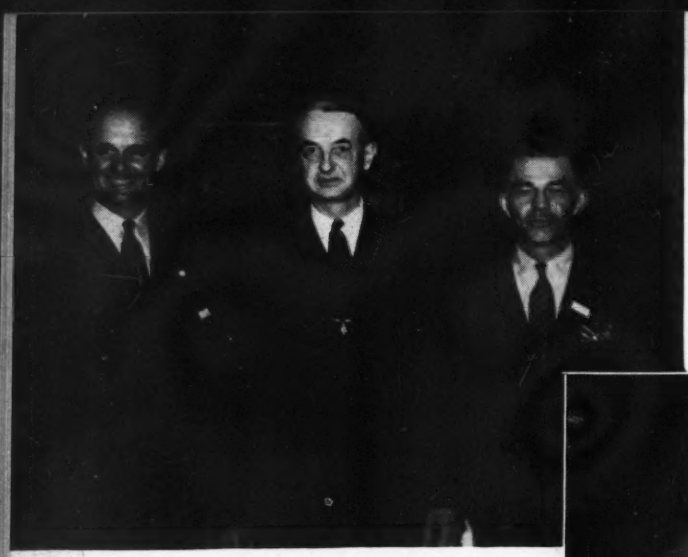
Cooperative Advertising: F. M. Raymond, San Diego Gas & Electric Co., San Diego.

Women's Committee: Ruthellen Beach, Southern Counties Gas Co., Whittier.

Committee for Gas Industry Development: H. L. Masser, Southern California Gas Co., Los Angeles.

Home Service Committee: Marguerite Fenner, Pacific Gas & Electric Co., Sacramento.

Among Delegates t



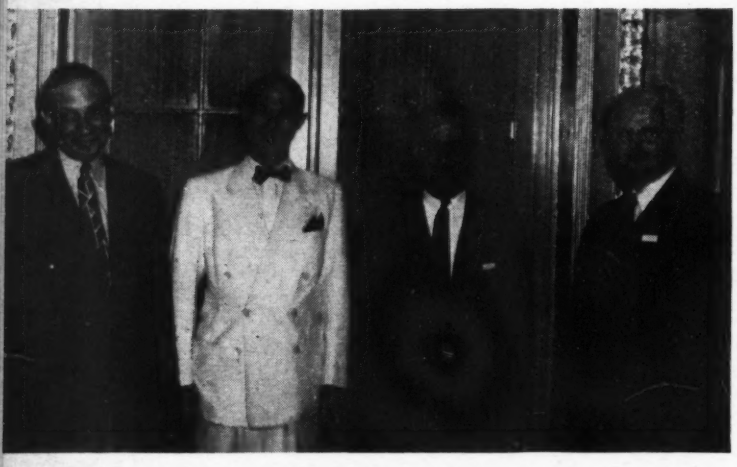
PCGA President **F. M. Banks,** vice president, Southern California Gas Co.; PCGA Managing Director **Clifford Johnstone,** and PCGA President-elect **E. L. Payne,** vice president and general manager, Payne Furnace & Supply Co.

Charter Member **C. O. G. Miller,** chairman of the board, Pacific Lighting Corp., San Francisco, and **Franklin S. Wade,** president and general manager, Southern California Gas Co., Los Angeles.

BELOW

TOP: **Russ Waters,** Pittsburg Equitable Meter Co. and Merc Nordstrom Valve Co., San Fra cisco; **H. L. Masser,** chairma PCGA Committee for Gas Indu try Development and executiv vice president, Southern Califo nia Gas Co.; **R. W. Martindal** U. S. Pipe & Foundry Co., Sa Francisco.

BOTTOM: **Col. W. F. Rockwe** president AGAEM and presider Pittsburgh Equitable Meter Co Pittsburgh; AGAEM Vice Pres dent **D. P. O'Keefe,** O'Keefe Merritt, Los Angeles; **H. Leig Whitelaw,** managing director AGAEM, New York City.



Ray Logue, vice president and general manager, Ward Heater Co., Los Angeles; **Clyde Potter,** commercial manager, Southern Counties Gas Co.; **W. L. Hoyt,** sales department, Day & Night Mfg. Co., Monrovia, Calif.; **J. E. O'Hagan,** general manager, Grayson Heat Control, Ltd., Lynwood, Calif.

AT LEFT: **J. F. Stafford,** Connelly Iron Sponge & Governor Co., Chicago; **R. A. Chambers,** generfal foreman, San Diego Gas & Electric Co.; **L. J. Willien,** chief gas engineer, Public Utility Engineering & Service Corp., Chicago. CENTER: Vice President **William Moeller, Jr.,** Southern California Gas Co., and **Frank Wills,** engineer of production for Pacific Gas & Electric Co., San Francisco. AT RIGHT: **C. H. Webber,** superintendent gas department, Tucson Gas, Electric Light & Power Co.; **F. L. Fairchild,** president, Sprague Meter Co., Bridgeport, Conn.; **E. J. Werthman,** Sprague Meter Co., Davenport, Iowa.

s t CGA's 50th Meeting

W. M. Jacobs, chairman PCGA Post-War Appliance Committee, and **C. V. Sorenson,** chairman, sub-committee on Post-War Purchasing Power and Potential Markets, AGA Post-War Planning Com.

BELOW

OP: Past PCGA President **James Pollard,** retired president, Seattle Gas Co.; **Mrs. Charles Sturkey** and **Charles Sturkey,** vice president and general manager, Seattle Gas Co.

OTTOM: Past Presidents **Norman McKee,** vice president, South Counties Gas Co., and **R. S. ller,** engineer of construction d operation, Pacific Gas & Elec. Co., sit on either side of CGA's long-time treasurer **D. G. rtin,** auditor Pacific Gas & Electric Co., San Francisco.

American Gas Association President **Arthur F. Bridge,** vice president and general manager, Southern California Gas Co., Los Angeles; **Gladys Warren,** general chairman, Woman's Committee, San Diego Gas & Electric Co.; **F. S. Wade,** president, Southern California Gas Co., Los Angeles.

Incoming Technical Chairman **F. F. Doyle,** manager, natural gas division, Pacific Gas & Electric Co.; **R. E. Fisher,** vice president, Pacific Gas & Electric Co.; **Mrs. O. R. Doerr** and **O. R. Doerr,** PCGA vice president-elect and general sales manager, Pacific Gas & Electric Co.

AT LEFT: **Carl Sorby,** vice president, Geo. D. Roper Corp., Rockford, Ill.; **Clyde Potter,** Southern Counties Gas Co.; Geo. D. Roper President **Stanley H. Hobson; W. H. Vogan,** supervisor, Pacific Coast branch, AGA Testing Laboratories. AT RIGHT: **Louis Ruthenburg,** president, Servel, Inc.; PCGA Past President **H. L. Farrar,** president, Coast Counties Gas & Electric Co., San Francisco; **G. P. Egleston,** manager, H. R. Basford Co., San Francisco; **C. A. Miller,** regional sales manager, Servel, Inc., San Francisco.

participation in the fifth freedom is lost."

At the same session C. V. Sorenson, post-war planning committee chairman for the AGA, told the convention that the estimated 23% increase in families with incomes of $2000 or more offers a challenge to the gas industry; while effects of population shifts due to the war effort were discussed by H. L. Masser, executive vice president of the Southern California Gas Co. Exhaustive investigation and research are required, Mr. Masser said, if the industry is to be ready to meet the problems of peace.

During the Thursday general luncheon, conventionites were warned by Major Gen. Walter K. Wilson, U. S. Army, not to adopt the idea that Japanese air attack is impossible. "The Jap is dumb enough to think that nuisance air raids, shelling of coastal cities or perhaps sabotage will reduce America's war effort," Gen. Wilson said, "and may attempt one or all of these methods of opposition."

Home Service Breakfast

In general, every meeting was well attended and the speakers received with enthusiasm. This was particularly indicated at the home service breakfast on Thursday morning, at which Carl Sorby, vice president, Geo. D. Roper Corp., was the speaker of the occasion in a provocative address, "Our Future —From the Experiences of the Past."

A feature of the convention attracting much attention was the exhibit of war materials which have replaced appliances on the assembly lines of member manufacturers. Twenty-two manufacturers participated in this exhibit and in addition there were exhibits by the Southern California Gas Co. and the AGA Testing Laboratories. A description of this exhibit was the subject of a special broadcast sent out by Columbia which featured interviews with A. H. Sutton, chairman of the manufacturers section; F. C. Packer, chairman of the exhibit committee; and H. L. Masser, responsible for the synthetic rubber exhibit.

The Basford Trophy was awarded to the manufacturers section. This section had unique opportunities during the year for rendering public service and it realized them more than adequately.

Another feature of the convention was the women's committee year books which are submitted at each annual meeting by company committees. These books offered concrete evidence of the increasingly important part women are taking in the work of public utilities. First prize in a close contest this year went to the San Diego Gas & Electric Co. committee, Gladys Warren, chairman, and second prize to the committee of the San Joaquin Power Division of Pacific Gas & Electric Co., Dolly D. Eden, chairman.

At a dinner given in honor of the older members of the association, 15 of the 39 association members who this year complete 25 years or more of continuous membership were seated at the "old-timers" table. C. O. G. Miller, a charter member with 50 years of membership, responded for the old-timers and wished the association many more years of useful service.

AGA'S 1943 WAR CONFERENCE

Conservation of Fuel, Materials, Manpower; Post-War Advertising and Appliance Design to Be Discussed

THE 25th Annual Meeting of the American Gas Association, which takes place Oct. 26, 27 and 28 at the Jefferson Hotel, St. Louis, Mo., will deal with the problems of Victory and the Post-War. Vital topics will be effective gas utilization in war industries, production, fuels, materials and manpower conservation, and all the problems connected with food production. Post-war subjects revolve around gas industry research, appliance developments, advertising, marketing, and technological improvements.

The program consists of a general luncheon, Oct. 27, with a general session in the afternoon. Two general sessions and a luncheon are scheduled for Oct. 28. The home service breakfast will be held Wednesday morning, while sectional meetings will take place all day Tuesday and Wednesday morning.

General Sessions: At the first session President Arthur F. Bridge will present his address, reviewing the events of his administration. Ernest R. Acker, vice president of the associaton and chairman of the committee on war activities, will speak on "The War and the Gas Industry." Another Wednesday general session speaker will be Marcy L. Sperry, president of the Washington (D. C.) Gas Light Co., who will stress the importance and progress of research. Elections will be held at this session.

A highlight of the Thursday general session will be Dr. W. H. Sebrell, associate director, Food Distribution Administration, U. S. Department of Agriculture, who will speak on "Civilian Nutrition and the War."

"Forward Thinking on Post-War Needs" will be the topic of Col. Hudson W. Reed, president, Philadelphia Gas Works Co. The place of advertising now and after the war will be covered by H. Carl Wolf, chairman of the association's national advertising committee.

The manufacturers' point of view in connection with appliance development will be discussed by Frank H. Adams, vice president, Surface Combustion and chairman, post-war planning committee, Association of Gas Appliance and Equipment Manufacturers.

A large portion of Thursday's program has been assigned to a comprehensive presentation of the work of the AGA post-war planning committee under the chairmanship of A. M. Beebee, Rochester Gas & Electric Corp. Mr. Beebee will describe the basic planning and achievements of his group in laying the cornerstone of a sound post-war policy. He will then introduce leaders of the separate phases of the committee's investigations, who will speak on the following subjects:

"Post-War Purchasing Power and Potential Markets"—C. V. Sorenson, Northern Indiana Public Service Co., Hammond.

"Factors Affecting the Realization of Potential Markets"—R. J. Rutherford, Worcester Gas Light Co., and R. E. Ginna, Rochester Gas & Electric Corp.

"Engineering and Economic Problems within the Gas Industry"—Hall M. Henry, NEGEA Service Corp., Cambridge.

"National Planning and Trends"—Walter C. Beckjord, vice president and general manager, Columbia Gas & Electric Corp., New York.

Awards: Awards for distinguished service to the gas industry will be presenter at the Thursday general luncheon. These include: Charles A. Munroe Award, Beal Medal, AGA Meritorious Service Award, McCall Home Service Awards and the Million-Man-Hours Awards.

Harry K. Wrench, vice president and general manager, Minneapolis Gas Light Co., is chairman of the general sessions program committee. He is assisted by F. M. Banks, vice president, Southern California Gas Co., Los Angeles; Burt R. Bay, president, Northern Natural Gas Co., Omaha; L. Wade Childress, president, The Laclede Gas Light Co., St. Louis; Lyle C. Harvey, president, The Bryant Heater Co., Cleveland; Col. Hudson W. Reed, The Philadelphia Gas Works Co., Philadelphia; and John West, president, Worcester County Electric Co., Worcester, Mass. (*Turn to page 56.*)

MILLIONS OF HOMEMAKERS LEARNING ADVANTAGES OF ROBERTSHAW OVEN HEAT CONTROLS—SALES ADVANTAGE SEEN WHEN RANGES AGAIN AVAILABLE

TUNE IN THE ROBERTSHAW BROADCASTS OVER THESE STATIONS:

METROPOLITAN MARKET	RADIO STATION	RADIO PROGRAM	BROADCAST SCHEDULE
NEW YORK	WOR	Martha Deane	Mon. thru Fri.
CHICAGO	WGN	June Baker—"Home Management"	Mon. thru Sat.
LOS ANGELES	KNX	Galen Drake—"Housewives' Protective League" Combined with "Sunrise Salute"	Mon. thru Fri. Mon. thru Sat.
PHILADELPHIA	WCAU	Ruth Chilton—"For Women Only"	Mon. thru Fri.
BOSTON AND NEW ENGLAND MARKET	*New England Network* WBZ—Boston, Mass. WCSH—Portland, Me. WTIC—Hartford, Conn. WLBZ—Bangor, Me. WJAR—Providence, R. I. WBZA—Springfield, Mass.	"Marjorie Mills"	Two days per week to alternate with "Yankee Kitchen"
	Yankee Network WNAC—Boston WEAN—Providence WAAB—Worcester WTHT—Hartford WLLH—Lowell—Lawrence WATR—Waterbury WHYN—Holyoke—Springfield WICC—Bridgeport WFEA—Manchester, N. H. WSAR—Fall River WCOU—Lewiston—Auburn, Me.	"Yankee Kitchen"—Ken and Carolyn	Two days per week to alternate with "Marjorie Mills"
DETROIT	WJR	"Mrs. Page's Household Economies"	Mon., Tues., Thurs., Sat.
PITTSBURGH	KDKA	Evelyn Gardiner—"Home Forum"	Mon. thru Fri.
SAN FRANCISCO—OAKLAND	KQW	Galen Drake—"Housewives' Protective League"	Mon. thru Fri.
ST. LOUIS	KMOX	Jane Porter—"The Magic Kitchen"	Mon. thru Sat.
CLEVELAND	WTAM	Jane Weaver—"Woman's Club of the Air"	Mon. thru Fri.
BALTIMORE	WBAL	Mollie Martin	Mon. thru Fri.
MINNEAPOLIS—ST. PAUL	KSTP	Bea Baxter "Household Forum"	Mon. thru Fri.
WASHINGTON, D. C.	WRC	Mary Mason—"Home Forum"	Mon. thru Fri.
BUFFALO—NIAGARA	WBEN	"The Food Magician" (O. P. Stearns)	Mon. thru Fri.
CINCINNATI	WLW	Ruth Lyons—"Consumers' Foundation"	Mon. thru Sat.
INDIANAPOLIS	WIRE	Richard Stone	Mon. thru Sat.
ROCHESTER	WHAM	Hazel Cowles—"Women Only"	Mon. thru Fri.
DENVER	KOA	Lora Price—"Home Forum"	Mon. thru Fri.
SCHENECTADY	WGY	Betty Lennox—"Household Chats"	Mon. thru Fri.
KANSAS CITY	KMBC	Caroline Ellis—"The Happy Home"	Tues., Thurs., Sat.

Through the above outstanding women's interest programs on prominent radio stations, Robertshaw is urging millions of homemakers to demand Robertshaw Oven Heat Controls when new ranges are again available.

COMPANY YOUNGWOOD, PA.

The executive board of the American Gas Association at its New York meeting, Sept. 14, 1943. Seated, left to right: Col. Hudson W. Reed, C. M. Cohn, James A. Brown, Alexander Forward, President A. F. Bridge, Vice President E. R. Acker, W. C. Beckjord, Treasurer J. L. Llewellyn, D. W. Harris, Major T. J. Strickler. Standing: Randall J. LeBoeuf, E. J. Boothby, John W. Batten, B. H. Gardner, E. P. Noppel, C. A. Tattersall, C. F. Turner, L. A. Mayo, W. E. Derwent, Kurwin R. Boyes, C. V. Sorenson, G. S. Hawley, E. J. Tucker, H. L. Gaidry, Burt R. Bay, H. N. Mallon.

The local arrangements committee consists of Alfred Hirsh, vice president, The Laclede Gas Light Co., St. Louis, and Ephraim H. Lewis, vice president, The St. Louis County Gas Co., Webster Groves, Mo.

■ ■

ICI Plans Promotion for Post-War Air Conditioning

A program of public and trade education for air conditioning will be undertaken by the newly formed Indoor Climate Institute, with headquarters at Detroit. Organized by leading manufacturers of heating and cooling equipment, the institute has as its primary purpose the improvement of heating and air conditioning, serving as a clearing house of information, clarifying conceptions as to systems and methods. Local chapters will be established throughout the country, to be composed of local trade units such as dealers and utility companies. Heading the new institute as president is Paul B. Zimmerman of Chrysler Corp. Airtemp division.

It is pointed out that the heating or cooling of buildings, next to food, is the most important item affecting the health of the country, and that automatic regulation temperature and humidity in the post-war period will provide a new conception of indoor climate control.

■ ■

SCMA Measurement Course Attracts Attention

The Southern California Meter Association's measurement course, in which all gas measurement principles are reviewed, has attracted considerable attention, evidenced by large audiences since the course began last August. The October meeting, the third in this series of 10, will include the following papers to be read: "Maintenance of Orifice Meter Plates and Tubes," Walter Bostrom, General Petroleum Co.; "Temperature Determination in Orifice Meter Runs," Mark McIlvaine, Chancellor, Canfield, Midway Oil Co.; and "Orifice Meter Fittings," Gurney B. Reece, Southern Counties Gas Co.

■ ■

Dallas Gas Men Convene To Discuss Conservation

In response to the War Production Board's conservation program, a group of gas men met in Dallas, Texas, Sept. 20, to discuss ways and means of conserving natural gas by military establishments in the territory covered by the Eighth Service Command.

The meeting was called by J. H. Warden, general sales manager, Oklahoma Natural Gas Co. L. W. Crump acted as secretary for the meeting. Companies represented at the meeting were: United Gas Pipeline Co., Arkansas-Louisiana Gas Co., Lone Star Gas Co., Southern Union Gas Co., Consolidated Gas Utilities Corp., Cities Service Gas Co., and Oklahoma Natural Gas Co.

■ ■

Industrial Gas Round Table At National Metal Congress

The industrial gas round table at the National Metal Congress will be held in the Palmer House, Chicago, Oct. 20. The round table will be sponsored by the industrial and commercial gas section of the American Gas Association and will be presided over by Carl H. Lekberg, Public Service Co. of Northern Indiana, Hammond, Ind. There will be a full program reviewing the technical experiences in applying gas to various metal-treating operations under war production conditions and several authorities will speak on plans for industrial gas utilization during the post-war period.

Gas Reserves Studied at IOCC Meeting

DANGER that the known natural gas reserves of the United States may be exhausted within 20 years was pointed out by Eugene A. Stephenson, professor of petroleum engineering at the University of Kansas, in an address before the fall meeting of the Interstate Oil Compact Commission held in the La Fonda Hotel, Santa Fe, N. M., Sept. 24 and 25.

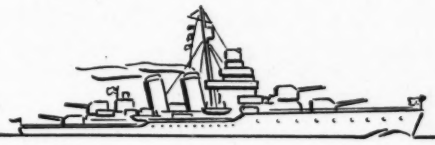
"Natural gas consumption shows an almost steady increase during the entire 40-year period from 1900 to 1940 except for minor recessions in 1918, 1920 and 1930-33," said Mr. Stephenson. He declared that by 1950 the 85 trillion cu. ft. of proven reserve, estimated last year by Ralph E. Davis in a study made for the Interstate Oil Compact Commission, will be nearly half gone. "If the consumptive rate should simply remain stable after that year, only nine more years would be required to completely exhaust the known proven reserve," the speaker concluded.

Referring to a big gas pipeline project recently approved by the Federal Power Commission which provides for removal of more than 100 billion cu. ft. of natural gas per year from Kansas, Oklahoma and probably Texas to the vicinity of the great coal-producing centers of the United States, Mr. Stephenson declared that construction of this line will endanger the large investments of the pipeline companies already operating in the Kansas, Oklahoma and Texas fields. "The companies connected to these large sources of supply should rally in unison against its construction," the speaker declared. He expressed the conviction that the construction of the line could contribute little to the war effort, as it would require at least a year to complete the project and would impose additional burdens on the railroads already "staggering under excessive loads."

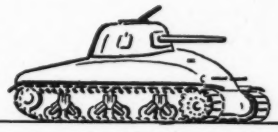
Discussing California's future oil supplies, E. E. Pyles, Los Angeles, chairman of production committee No. 5, stated that on the basis of viewpoints expressed by geologists and production engineers, California may anticipate the discovery of at least three billion barrels more of oil reserves.

"It is to the development of secondary recovery methods, however, that we must look for our greatest contribution to the state's ultimate production of petroleum," he said. Mr. Pyles estimated that not more than 25% of the original oil content of the produc-

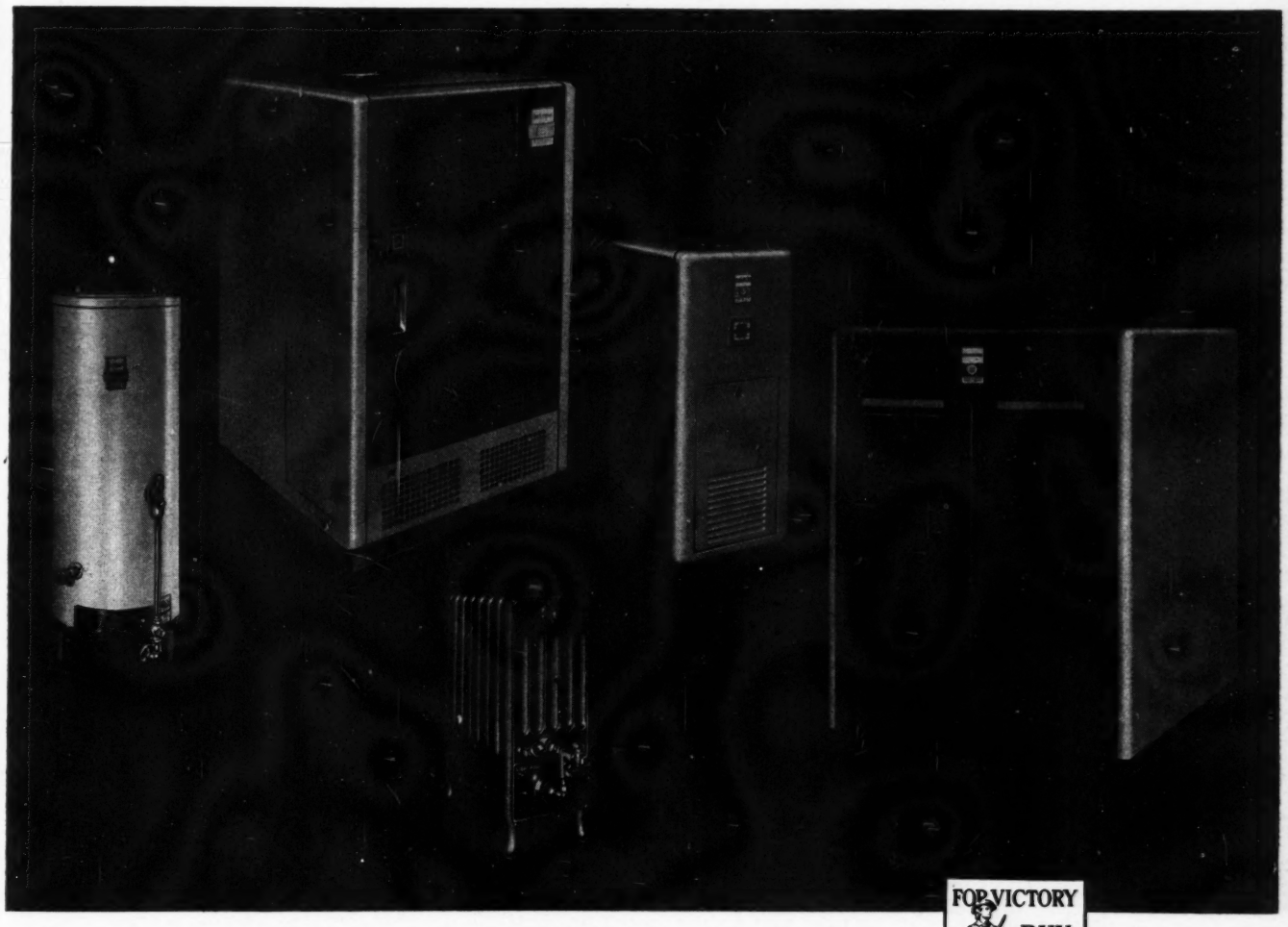
War



Production



has the call——



THE PRODUCTS to which we devoted our peace time energies are essential to human health and comfort, and helped increase the span of life.

But War imposed new and urgent needs which all industry had to meet.

The needs of both Peace and War could not be combined and supplied at the same time. So, War Production had the call and our factories have been converted largely to producing vital parts for war implements.

The AMERICAN Gas Heating and Water Heating Equipment we are making is limited to authorized requirements. Ordinary civilian needs must necessarily await the day when Victory is achieved.

When that time comes our activities will revert to normal. The introduction of new products, new models and new designs will follow in orderly fashion.

Our conception of the post-war period does not call for nor contemplate any change in our pre-war method of distribution.

AMERICAN RADIATOR & Standard Sanitary

New York CORPORATION Pittsburgh

ing sands in California have been recovered and that 27 billion barrels of residual crude remain in the ground to the production of which secondary recovery methods can be applied.

Mr. Pyles stated that gas and air drives had been used in California "with indifferent results" because of the non-uniformity of permeability which has caused gas to blow through from one area to another without doing the work of oil recovery. He stated, however, that serious attention is now being given to at least six projects on a small scale, now in operation in the state.

"We are faced with a grim and very real shortage of crude oil in the United States of America," declared Ernest O. Thompson, member of the Texas Railroad Commission. "This shortage is not an impending one — this oil shortage is here now. We are really short of oil and gasoline, critically short." He quoted data from hearings, sworn testimony of operators and government and war agency reports to support his statements.

Governor John J. Dempsey of New Mexico condemned efforts of the Department of Interior to control New Mexico oil operations through utilization of agreements on federally owned lands.

John Kelly, state geologist for New Mexico, said that through cooperative efforts of New Mexico state officials, over 99% of the Hobbs field oil has been recovered through restricted rates of flow.

Deeper ration cuts of gasoline east of the Rockies are inevitable unless the "present short-sighted price policy in petroleum by a cycle of price administrators and their staffs is changed," declared B. L. Majewski, vice president, Deep Rock Oil Corp., Chicago, and chairman of the PIWC marketing committee.

Figures to show the falling off in drilling operations in Kansas and Oklahoma from 1937 to 1942, inclusive, were cited by J. C. Day, Western Petroleum Refiners Association, in a paper on problems confronting Mid-Continent refiners, to show why crude stocks and refinery runs have not been maintained at their maximum.

A survey undertaken by the research and coordinating committee of the Interstate Oil Compact Commission dealing with the history and administration of oil and gas conservation laws will be completed and published prior to the next quarterly meeting of the commission, E. G. Dahlgren, secretary of the committee, stated. A preliminary report of the committee's survey of underground natural gas projects has been completed and after some revisions and additions will be available for publication in the quarterly bulletin of the commission, the committee reported at the Santa Fe meeting.

Secretary Charles Orr announced that the next meeting of the Interstate Oil Compact Commission will be held at Wichita, Kan., Friday and Saturday, Dec. 10-11.

■ ■

WPB AND FPC OUTLINE NATURAL GAS AGREEMENT

IN ORDER to avoid duplication of effort and confusion and to make the most effective use of their staffs and information, the WPB, acting through the Office of War Utilities, and the FPC observe and will continue to observe the following definitions of their respective responsibilities and the following procedure in carrying them out:

Responsibilities of WPB

The WPB has exclusive responsibility for the following problems arising out of the supplying of natural gas for the war program:

1. Development and administration of programs to assure that the equipment and materials which can be made available for the purpose of supplying natural gas are allocated where and when the need is most urgent from the standpoint of the military and war production program, keeping in mind the needs for natural gas for civilian purposes. This includes priority control and allocations of materials and equipment for all systems transporting and delivering natural gas and for industries operating or installing facilities for the supply or utilization of natural gas.
2. Determination of the supplies of, and demands for, natural gas in relation to the military and war production program and essential civilian activities. This includes the programming of natural gas requirements for war production and for the armed services.
3. The mobilization of natural gas supplies to meet war production requirements and the development and administration of programs for better coordination in the operation of natural gas transportation facilities, including integration and interconnections, to assure an adequate supply of natural gas for war production industries, the armed services and essential civilian service, including the expansion of existing natural gas transportation facilities where needed to meet such requirements.
4. The planning, development and administration of natural gas supply allocation programs for those regions where the available supply proves insufficient to meet all requirements.

Responsibilities of FPC

The FPC will in the public interest continue to exercise its full statutory powers as set forth in the Natural Gas Act, and amendments thereto, the principal of which are as follows:

1. (a) Pursuant to Section 7(a) of the act, to require extension and interconnection of facilities for the interstate transportation and sale of natural gas to distribution companies and distribution centers.

(b) Pursuant to Section 7(b), to control the abandonment of facilities and service of natural gas companies.

(c) Pursuant to Section 7(c), to determine whether public convenience and necessity require the construction of new, or extension or acquisition of existing, natural gas interstate transportation facilities, and to issue certificates of convenience and necessity therefor.

2. The fixing of rates for the transportation and sale of natural gas in interstate commerce; and the control of the importation and exportation of natural gas.

Mid-West Gas Association To Meet November 12

The second regional get-together meeting of the Mid-West Gas Association will take place at the Radisson Hotel in Minneapolis on Nov. 12. The one-day program will be as follows: Registrations, 9:30 a. m.; general open forum discussion, 10 a. m.; luncheon round table meetings in separate rooms, 12:30 p. m. Discussions will center around two main subjects—sales and technical. At the sales round table problems concerning domestic and industrial gas and appliance sales, current and post-war, will take place. At the technical panel, production, distribution, and service problems, current and post-war, will be reviewed. Adjournment is scheduled at 4 p. m. The meeting will be in charge of L. J. Eck and D. R. Putnam.

■ ■

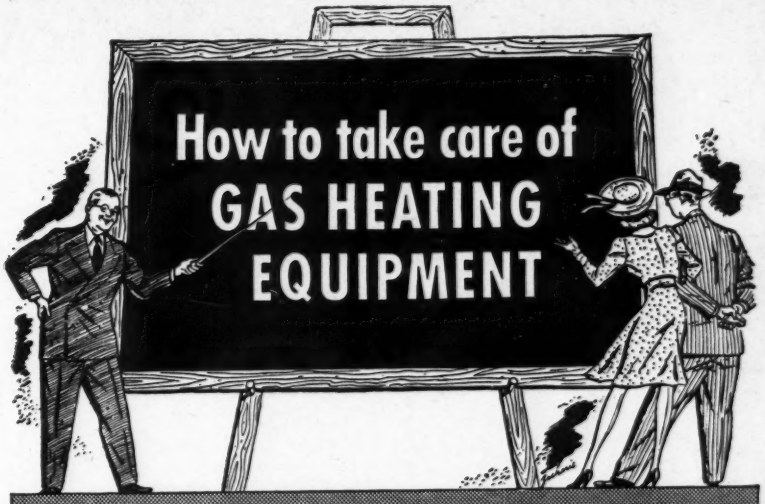
Gas Meters Association To Meet November 6

The fall meeting of the Gas Meters Association will be held on Nov. 6 in Gainesville, Fla., with headquarters at the Thomas Hotel. The general meeting will be called to order at 10 o'clock Saturday morning, Nov. 6, and the technical section will hold its meeting immediately following the brief general session. Because of the change in date of the 25th annual meeting of the American Gas Association from Oct. 11-13 to Oct. 26-28 in St. Louis, Mo., the fall meeting of the association is being scheduled as late as it is in order that these dates do not conflict.

■ ■

"Slug-a-Fome" Demonstration Seen at NEGA Meeting

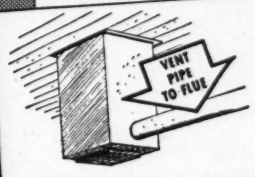
At the operating division meeting of the New England Gas Association (Boston, Mass.), held at Worcester on Sept. 15, members witnessed an emergency gas shut-off demonstration at the plant of the Worcester Gas Light Co. Here members saw the "Slug-a-Fome," a new device for the emergency stoppage of gas flow in low pressure mains and services. This device has already been used by the Elizabethtown Consolidated Gas Co. on mains up to 16 in.



RIGHT NOW is a good time to check up on the gas heating devices in your home. If repair is needed—do it at once. Usually, however, a good cleaning to remove dust and rust is enough. *See examples below:*

1 Take off the grill on your wall register or floor furnace. Have a cardboard carton handy and go to work with a brush or vacuum cleaner. A pancake turner can serve to lift out heavy dirt.

2 Is yours a forced-air furnace? Then take out filter pads. Give them a good cleaning or replace with new pads. Each fall have a heating dealer check over the furnace, fan, motor, controls and pilot light.



3 Take a look at the vent pipe that connects your heater and other gas equipment to the flue. If it is rusted out—have it replaced now.

4 Watch room temperature and save gas. Overheating your home isn't healthy anyway. If your fireplace has a damper—close it when the gas heat is on. It's good economy.

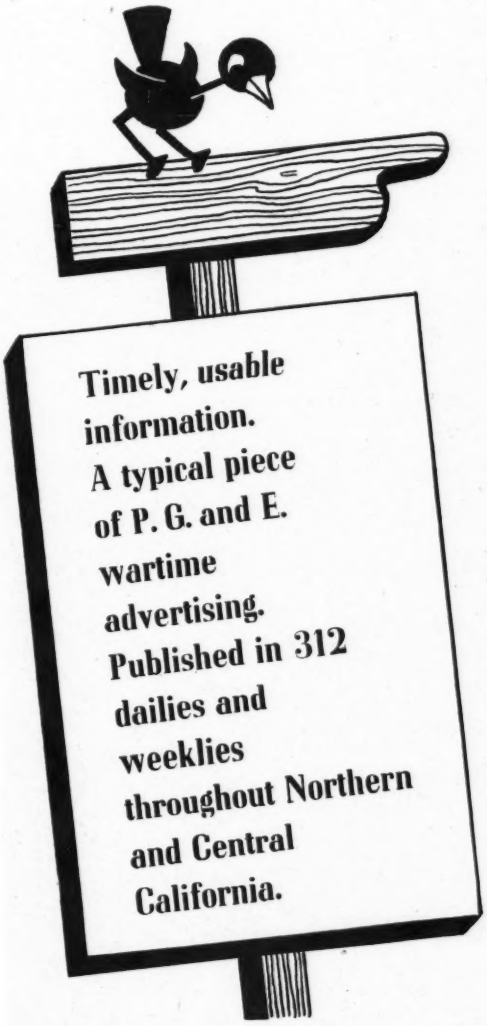
Gas Heating devices are built to give long years of service. Rust and dust are their worst enemies. With a little care now and then they will see you through the duration.

Duration-ize your Gas Heating Equipment with Proper Care, Proper Use and Timely Repair

217-W-943

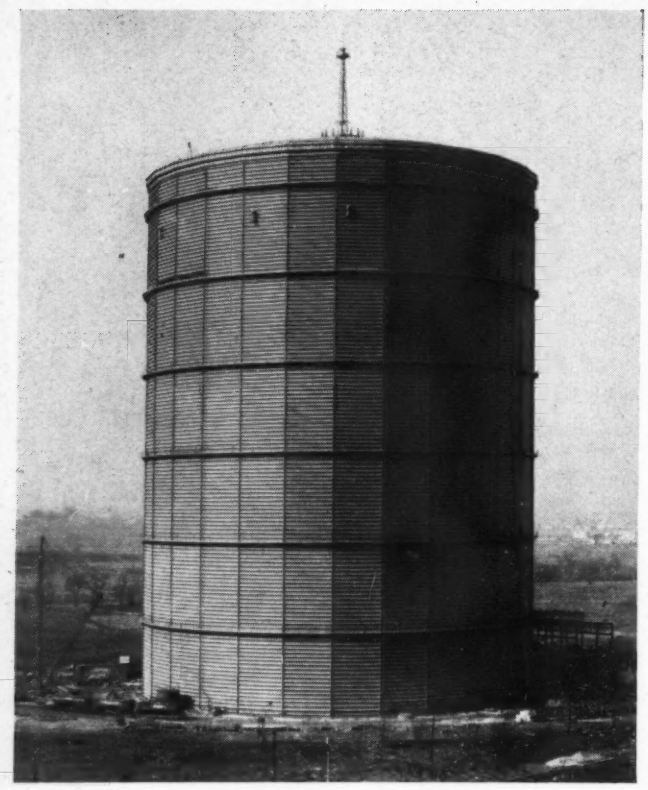
BUY U. S. WAR BONDS AND SAVINGS STAMPS

P·G·and·E·
PACIFIC GAS AND ELECTRIC CO.



Timely, usable information. A typical piece of P. G. and E. wartime advertising. Published in 312 dailies and weeklies throughout Northern and Central California.

Army Releases Facts on Chicago Holder Crash



The 73rd Street holder of the peoples Gas Light & Coke Co., Chicago, demolished on May 21 when struck by an army bomber, was of the waterless type. There was no explosion and the escaping gas burned up within a very short time.

THE FULL STORY of that tragic and foggy May morning in Chicago when an army bomber struck and demolished the world's largest waterless gas holder may never be known. The following article, however, has been approved by the army and was sent to GAS through the courtesy of ROBERT J. MORSE, editor of "Gas News," published by Peoples Gas Light & Coke Co.

THE tragedy, on May 21, which brought death to the 12 Army men in the bomber which hit and destroyed the 73rd Street Holder of The Peoples Gas Light and Coke Co., Chicago, the world's largest, left in its wake 5500 tons of scrap steel which will eventually find itself converted into the steel parts of guns, trucks, ships, and all the vast assortment of war material needed by our fighting forces.

The contract for clearing the site has been let to the Clonic Steel Co. of Chicago, and the scrapping work is about half complete. All of the steel must be first cut by acetylene torch into sizes that can be handled by the shears, which, in turn, cut the steel into the small pieces that meet the steel mill scrap specifications.

The plane which crashed into the holder left Tarrant Field, Fort Worth, Texas, the morning of the accident on a routine training flight. There were several Army passengers on board in addition to the crew—a total of 12. When the plane arrived at Chicago, the visibility was extremely poor, due to a drizzly rain and an accompanying fog. No commercial planes had landed at the Chicago Municipal Airport since early morning. The Army pilot had established radio contact with the airport control tower and had received landing instructions about 11:40 a. m. The Army plane missed it, and circled around, the pilot trying to orient himself.

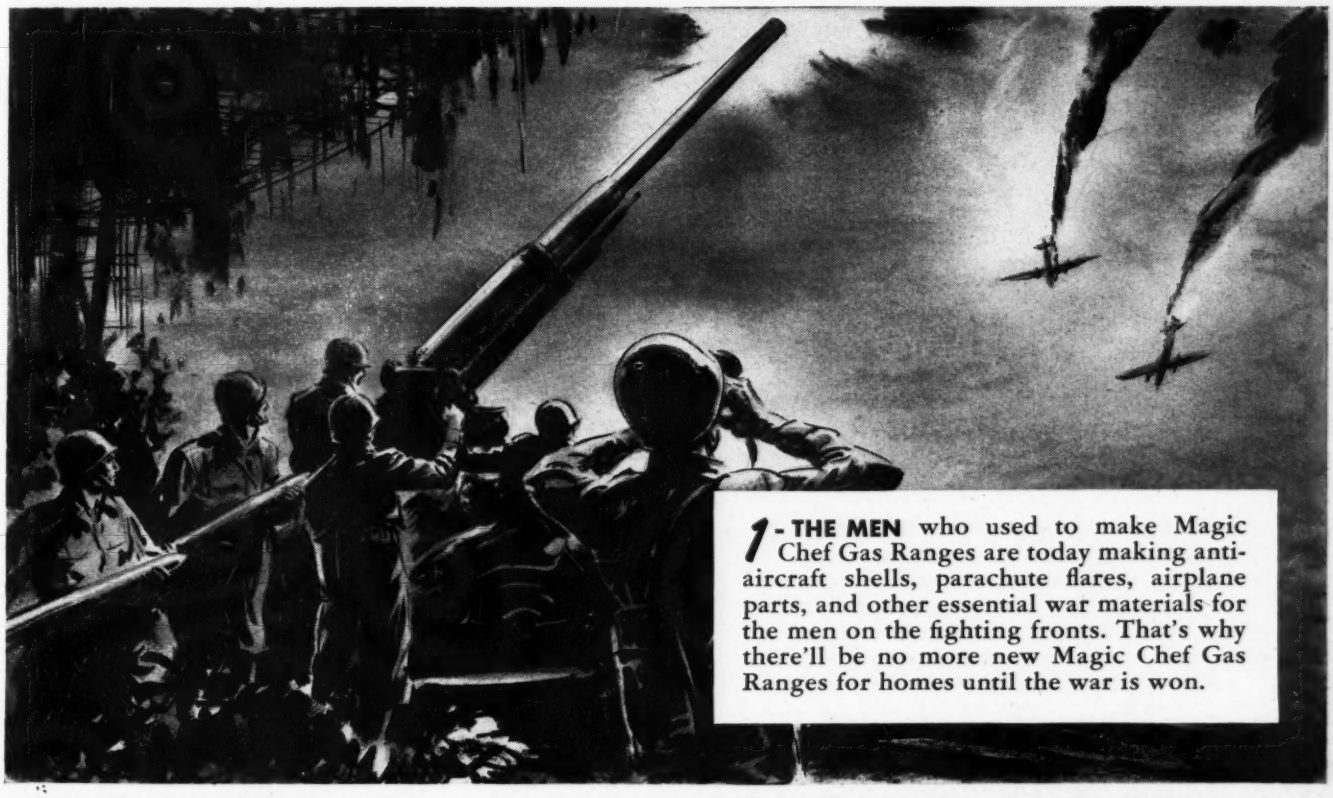
The plane was heard and seen briefly by several persons about a half mile north and somewhat east of the 73rd Street Holder flying southward at a very low altitude. One of the four employees at the 73rd St. Distribution Station, looking northward out of a window because of the sound of the motors, momentarily saw the plane apparently heading for the holder. A crash followed almost immediately, destroying the plane and the holder, and damaging the adjacent building slightly from flying plane debris.

The holder was of the waterless type, built in 1928, and was a 28-sided polygon with a floating piston confining the gas beneath it and preventing the escape of gas around the circumference by a tar seal. The holder was 280 ft. in diameter and 373 ft. in height from the ground to the edge of the roof. The top of the mast was just slightly less than 500 ft. above the ground. At the time of the accident, the holder contained 18 million cu. ft. of gas with the piston approximately 300 ft. above the ground.

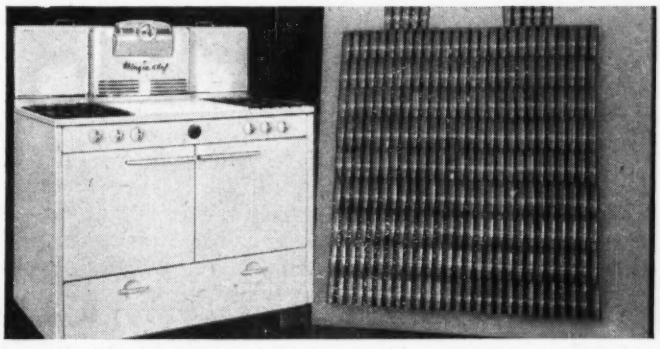
While the exact point of contact of the plane with the holder has not yet been determined, it seems fairly definite that the plane struck the north side of the holder somewhere between the roof and the piston, as evidenced by the fact that all plane parts within the holder have been found on top

Following the tragic accident, the world's largest waterless holder is reduced to 5500 tons of scrap steel.

How many Magic Chef Gas Ranges to knock down a dive bomber?



1 - THE MEN who used to make Magic Chef Gas Ranges are today making anti-aircraft shells, parachute flares, airplane parts, and other essential war materials for the men on the fighting fronts. That's why there'll be no more new Magic Chef Gas Ranges for homes until the war is won.



2 - THE MATERIAL once used to make one All-American Magic Chef Gas Range now produces over 250 40mm. anti-aircraft shells . . . about enough for 2 minutes' fire from a modern anti-aircraft gun that could knock down an enemy dive bomber.

3 - TODAY American Stove workers are working to close tolerances demanded for military equipment. Using new materials, new techniques. This knowledge, plus years of range making experience, will produce better Magic Chef Gas Ranges when victory comes.

COPR. 1943 AMERICAN STOVE CO.

Magic Chef

THE RED WHEEL GAS RANGE WITH THE LIFETIME BURNER GUARANTEE

AMERICAN STOVE COMPANY

4301 Perkins Avenue, Cleveland, Ohio

SAN FRANCISCO . . . LOS ANGELES . . . PHILADELPHIA
CHICAGO . . . ATLANTA . . . NEW YORK . . . ST. LOUIS
CLEVELAND . . . SEATTLE

★ ★ *The Best Investment in the World is in your Country's Future — Buy War Bonds* ★ ★

of the piston and beneath the collapsed roof. Most of the plane penetrated into the holder and parts were strewn throughout the interior. On the east and west sides of the holder, sections of the upper side walls fell outward, landing on the ground adjacent to the holder and for a distance of approximately 180 ft. away from the holder. The piston, with the dismembered plane upon it, fell unevenly within the holder, the roof apparently traveling with it. In general, less than one-third of the original structure remained standing. The absence of any serious explosion is indicated by the fact that in the adjacent Compressor House (which is about 75 ft. north of the holder) only a few window panes were broken, and these by falling debris from the plane. One bomb bay door crashed through the Boiler Room roof.

The escaping gas probably burned up within a very short time. However, the tar coating the inner walls of the holder, as well as that contained in the tar seal of the piston and also the tar contained in the tar dam at the base of the holder, was ignited and burned for many hours. Because the fire was almost entirely within the steel shell of the holder, with very few openings available for the introduction of water, the inside fire could be quenched only to a very limited extent. After 7:00 p. m. no more water was played upon the holder, but the hose streams were inserted into the gas mains to the holder in order to seal the inverts.

In order to isolate the holder more completely from the general distribution system, in addition to the closure of all pertinent valves, physical disconnection of two gas mains was undertaken. One, a 24-in. line, was severed shortly after midnight, and the other, a 36-in. line, was severed before noon of May 21st. When this physical isolation was completed, all gas mains were filled with water, displacing all gas to the atmosphere.

The holder was insured, and the question of replacement or not is a matter that is now being studied.

■ ■

Hope Line Hearing Postponed

The Federal Power Commission announced Sept. 30 its postponement without date of the hearing previously set to resume in Washington on Oct. 5, 1943, on an application by the Hope Natural Gas Co., Clarksburg, W. Va., for a certificate of public convenience and necessity to construct and operate a 22-in. natural gas pipeline from West Virginia to the Hugoton gas field in Kansas.

SOLVES YOUR PRESSURE PROBLEM

REGULATES AND CONTROLS YOUR GAS FLOW

SIZES FROM ⅜ IN. TO 2 INCHES

TROUBLE FREE

DEPENDABLE

SAVES LABOR

SAVES MONEY

H-M REGULATOR COMPANY
THERMO CONTROL CO.
800 EAST 108 STREET • LOS ANGELES, CALIFORNIA

Natural gas is the fuel used in this device which heats up airplane motors in from three to five minutes, saving much time over other methods. Here it is shown in actual use on a plane.

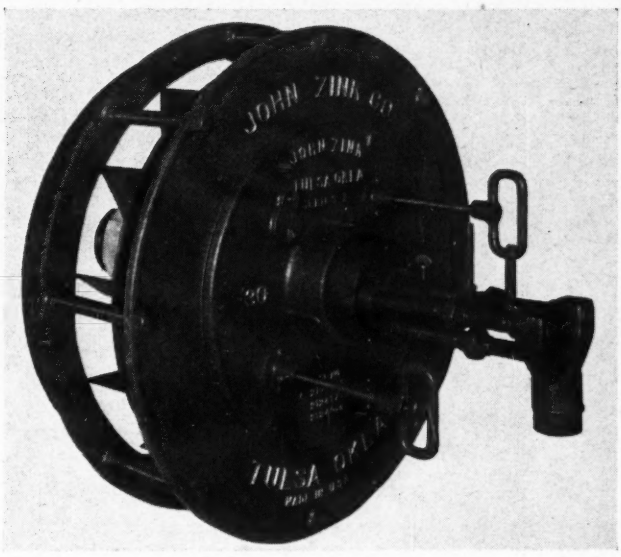
Gas Engine Warmer Helps Speed Up Pilot Training

THE gas engine warmer which Fulcher "Army" Armstrong of the Wichita Falls municipal airport devised some five years ago to save small airports gasoline is now doing its part in the war effort, according to an item in the *United Gas Log*, published by United Gas Pipeline Co., Shreveport, La.

By the use of this heater, planes vitally needed for the training of army pilots are speeded into the air with a saving of valuable training time. The few minutes which it takes to warm an engine represents a saving of about 10 minutes over the usual method, which is to start the engine and let run until it is warm enough to take off. In reality, the device saves much more time since starting a cold motor is not always easy.

A standard unit heater burning natural gas is enclosed in the hood just ahead of an electric blower. There is a return vent in the top of the hood, which results in the heated air being taken back through the heater after it circulates around the motor. The hood can be raised and lowered so that it will fit over the engine of any small plane. An asbestos blanket is thrown over any space which may exist between the hood and the plane's motor. Then, when the heater is started, an enclosed electric heating element is dropped into the crankcase, heating the oil. Similar devices are now being used at many army air fields.

JOHN ZINK BURNERS
Increase Boiler Capacities



Series Y Register Type Burner

"A Texas refiner writes that John Zink Series Y Combination Burners increased his boiler capacity 100% without flame impingement on tubes . . . they are entirely satisfactory in every way."

CENTER-FIRED REGISTER TYPE features: Independently Removable Fuel Guns—Uninterrupted Burner Service—Easy to Remove Fuel Guns —Easy to Operate—Simple in Construction.

These burners are particularly designed for boilers, oil and gas processing heaters and any other power or processing furnaces. Both oil and gas may be burned at the same time. Available in sizes from 14 to 30 inches. No special tile necessary. Any gas pressure from 5 to 25 pounds may be used.

"The Best Center Fired Combination Gas and Oil Burner in the World"

JOHN ZINK COMPANY
Tulsa, Oklahoma

NEW YORK • LOS ANGELES • DETROIT • SAN FRANCISCO

FPC Acts on Mid-Continent Shortage

THE Federal Power Commission moved swiftly Oct. 1 to relieve a natural gas transportation shortage in the mid-continent area by authorizing (1) the Cities Service Transportation & Chemical Co. to construct a 26-in. natural gas pipeline 231 miles in length from the Hugoton gas field in Texas County, Okla., to the Blackwell compressor station of Cities Service Gas Co. in Kay County, Okla.; and (2) the Cities Service Gas Co. to construct certain additions to its existing facilities to handle the gas to be delivered through the new "Hugoton" line.

Initially, the new line will increase natural gas supplies for the Cities Service Gas Co. system by 140,000,000 cu. ft. of gas per day. By installing additional compressor facilities, it proposed to attain a delivery capacity of 220,000,000 cu. ft. per day in 1945 and 240,000,000 cu. ft. in 1946.

Financing: The commission states that the president of Cities Service Co. (applicants' top holding company) testified that no negotiations have been or will be undertaken for the permanent financing of the $10,635,000 Hugoton line until construction is completed. Empire Gas & Fuel Co. and Cities Service Co. have entered into a firm commitment to advance all funds necessary to complete the project pending final financing arrangements. Such advances will be made by the purchase of capital stock of the Transportation company by the Empire company at par, or by advances at an interest rate not to exceed 6% per annum.

The final plan of financing will be submitted to the commission for approval. The commission also imposed the condition of submittal of a plan for the operation of the Hugoton line for prior consideration and approval.

While there has been some discussion as to the route of the facilities, FPC, because of war emergency, has concluded that the route as proposed by applicants will serve the public convenience and necessity.

Supplies in Kansas City Area: Evidence adduced during the proceeding shows that the new facilities authorized for construction will not increase gas deliveries to the Kansas City, Mo., metropolitan area and that, on the average, curtailments of gas service in that area will exceed those of the balance of the Cities Service system during the coming winter and the winter of 1944-1945.

The mayor of Kansas City, Mo., urged during the proceeding the construction of an additional 16-in. line, 75 miles in length, from the Welda storage field to augment deliveries to the Kansas City area. Construction of the Welda line has been proposed by the gas company but has been deferred principally because of the scarcity of pipe. The opinion adds:

"Upon proper application to this commission for authorization for a line from Welda to Kansas City, we shall give the matter our careful consideration and promptly take such action as then appears appropriate in the premises."

Facilities in Detail: Specifically, the commission's certificate calls for the construction and operation of:

(a) A 26-in. natural gas main transmission pipeline approximately 231 miles in length extending in an easterly direction from a point near Guymon, Texas County, Okla., in the Hugoton gas field to the Cities Service Gas Co.'s Blackwell compressor station in Kay County, Okla.

(b) An 8000-hp. compressor station and dehydration plant to be located at the western terminus of the main pipeline.

(c) A system of gathering lines from certain wells in the Hugoton field to the compressor station; and

(d) Telephone facilities between the compressor station and applicant's home office at Ponca City, Okla.

Cost of the foregoing facilities is estimated at $10,634,799.

A certificate of public convenience and necessity was issued to the Cities Service Gas Co. for construction and operation of:

(a) A 12-in. line, 35.25 miles in length, looping the existing pipeline from Burbank to Tallant, Okla.

(b) A 20-in. line, 11.25 miles in length, looping the existing 18-in. tie-over line immediately south and southeast of Wichita, Kan.

(c) The reconditioning of 16 miles of 16-in. line south of Wichita, Kan.

(d) An 8-in. line, 2.2 miles in length, to serve the increased fuel requirements of the Socony oil refinery at Augusta, Kan.; and

(e) The installation of 340 additional horsepower in applicant's existing Saginaw compressor station in Newton County, Mo.

The Cities Service Gas Co. system serves a wide area in northern Oklahoma, eastern Kansas, southern Nebraska and western Missouri, including the metropolitan areas of Kansas City, St. Joseph, Joplin and Springfield, Mo., and Kansas City, Lawrence, Topeka, Leavenworth, Hutchinson and Wichita, Kan.

■ ■

Galveston Voters Defeat Bill To Buy Lone Star Property

A proposal for the city of Galveston to purchase the local properties of the Lone Star Gas Co. through the issuance of revenue bonds was defeated by a vote of 4 to 1 in a recent special election.

The Mettler "FAN-AIR" Gas Burner

LATEST MODEL FEATURES

New Automatic Safety Pilot and Triple Controls

CONSIDER THE ABOVE "POINTS" WHEN SPONSORING GAS BURNERS

"Transaxil" Pilot and Flame Guard in the above picture reveals the simplicity and flexibility of Mettler Mechanical Draft Gas Burners. The burners and Transaxil Safety Pilot are scientifically coordinated, *providing instant fuel shutoff upon flame failure.*

LEE B. METTLER CO.

LOS ANGELES **406 South Main Street** **CALIFORNIA**

National Advertising Under Way

"THE Flame That Will Brighten Your Future." This slogan will greet the American public in the pages of the *Saturday Evening Post* for Oct. 16 and in the October *American Home* as the first in a series of advertisements prepared by the national advertising committee of the American Gas Association to usher in the 1943-44 campaign.

H. C. Wolf

Begun in leading national magazines and trade publications in 1936, the campaign has continued uninterruptedly since that time. According to Committee Chairman H. Carl Wolf:

> It has been based upon the relatively small contribution of 4¢ per meter from contributing companies. Not all the companies within the industry have been represented in this constructive and nation-wide effort, although it can be conservatively said that all have benefited by it. We believe it is the most constructive planning which the gas industry can do today to maintain the value of its investment as we enter the post-war era, and to give to gas service the modernity and prestige which will be needed if it is to maintain and increase its standing in the highly competitive years that lie ahead.

Keyed to the war effort, the program has been planned so that any sudden change in the conduct of the war will enable the copy themes of both the domestic and industrial and commercial gas branches to be changed to conform with existing conditions.

Post-War Domestic Market: Predicting post-war buying power, the new consumer campaign sees the following developments: There will be a vast replacement market for gas appliances of all sorts, but the booming replacement market in itself will not protect the gas load unless the industry keeps ahead of competition. The real protection of this load demands that gas receive its full share of replacement in the new home market and in the continued use by industrial and commercial consumers. The buying power after the war, due to higher incomes, will be heavy because of the increase in savings and the purchase of war bonds; debts will have been largely paid off, including payments on installment buying, while at the same time restrictions on installment sales will be removed, and the usual custom of buying on time will be resumed. Labor rates and purchasing power will be up and the employment level in industry will continue to be high.

As reported in *GAS* (August, 1943, p. 36), the unlimited post-war market for gas appliances is stressed in the figure estimating that the accumulated need for domestic cooking appliances, if the war in Europe is brought to an end some time in 1944, will be approximately 6,000,000 for ranges alone. Authorities in the building industry claim that 1,600,000 new homes will be constructed each year during the decade following the war.

In outlining the post-war heating and gas air conditioning, cooking and water heating facilities, and refrigeration in the home, the advertising committee has given the new advertising these characteristics:

> It depicts the results of gas service rather than the physical means by which this service is rendered.
>
> It does this in a way that gives to gas a quality of magic which it has so far lacked in public consciousness.
>
> It compasses all of the services which gas renders to the home completely equipped with gas.
>
> It is so vital, alive and interesting that it makes readers sit up and take notice. We must jog or even startle people from their lethargy about gas and their concept of this fuel as old fashioned.
>
> It is designed to secure the widest possible reading in order that our limited appropriation may have a maximum effect.
>
> It covers the need for gas conservation in a way that will be acceptable to all contributing companies and do its share in promoting the urgent need for savings by the purchase of war bonds.

The November ad continues the fanciful motif adopted for the new campaign.

Industrial and Commercial Program: During the advertising year 1943-44, industrial and commercial gas advertising will also be keyed to the war program. A series of ads yet to be developed in detail will combine the prestige story of gas with the offer of service by gas company industrial engineers to help customers obtain maximum efficiency from their present gas equipment.

The committee in charge of industrial and commercial gas advertising believes that such engineering service will help customers get greater production out of their present gas equipment and will help in the task of conserving gas and making present equipment last longer. It is further believed that such advertising will be a prestige and good will builder.

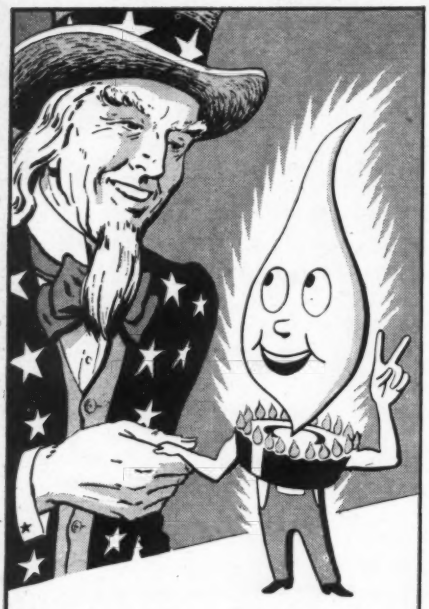
In the opinion of the advertising committee of the association's industrial and commercial gas section:

> The vital role gas fuel has been and is playing in the furtherance of the all-out war effort is the most spectacular and the most dramatic story the entire industry has to tell. The telling of this story widely and consistently will do the industry more lasting good, particularly in the post-war period, than any other approach that can be used.

The committee is now engaged in a study of the various fields in which there is a large-scale use of industrial and commercial gas, and is surveying the fields of metals, ceramics, baking, hotel, restaurant, and general manufacture. The following magazines are scheduled to carry insertions on industrial and commercial gas advertising:

Metals: The Iron Age, Steel, Metals and Alloys, Metal Progress, Industrial Heating.
Ceramics: Ceramic Industry, Glass Industry.
Commercial: Bakers Weekly, American Restaurant, Hotel Management, Modern Hospital.
General: Business Week.

Seven-Year Program Productive: In the seven-year campaign in national magazines and business and trade papers, over 15,000,000 families have been reached, or more than half the homes in the country. Despite the fact that since 1936 the competitive field of electricity has expended $33,917,419 on advertising as against the $5,549,618 spent by the gas industry in the same period of time, the AGA shows that advertising has achieved the following results for the industry:



TEAMWORK WINS

Gas Industry of the West Solves Wartime Problems by Cooperation.

For nearly a half-century, members of the P.C.G.A. have *pulled together.* War found them ready and able to meet emergency demands. One example:

SHORTAGE OF MATERIALS

Steel, copper, rubber, leather and tin to the Gas Industry mean pipe, valves, gaskets, solder and countless other items—used daily in serving the armed forces, vital war industries and 1,250,000 western home consumers. How to make the available supplies go further?

MEMBERS POOL RESOURCES

Gas companies exchanged inventory lists, to the end that emergency needs of one could be met from stock piles of others. Similarly, appliance manufacturers collaborated to assure completion of the maximum number of partially fabricated units. ★ An industry that can cooperate is a healthy industry. Gas men know *teamwork;* that's the spirit that wins!

THE PACIFIC COAST GAS ASSOCIATION

SERVING THE WEST—IN WAR AND PEACE

GAS FUEL

An increase of public awareness of the superior design and operating features of modern gas appliances.

A new respect for the gas industry in the ranks of other industries.

A stimulus to the morale of the people within the industry and an impetus to more aggressive action.

Better appreciation of the inherent advantages of gas as a fuel.

An extension of the industrial and commercial uses of gas.

Advertising Program Supplemented: Publicity activity, collateral to the advertising program, will be carried on as formerly. Ideas for articles will be suggested to the editors of magazines and specially prepared stories and scripts will be released to newspapers and radio stations.

Mats of the national ads will be made available for publication in the local press, enabling companies to localize the national message and identify themselves with it. This direct means of tie-in has been used since the national program was launched seven years ago.

In outlining plans for November, the committee has announced that ads will further be carried in *Better Homes and Gardens* and *Ladies' Home Journal.* More definite publication dates cannot be made because of the paper shortage, but it is the committee's desire to add other magazines to the so-called "minimum plan" as the advertising program develops.

Canada Seeks Conservation Measures

LEGISLATION will be introduced in the next session of the Alberta legislature to make the natural gas markets available to all producers and put an end to the present forced wastage of gas throughout Turner Valley field, Premier Manning declared in an address recently.

The proposed legislation would require the Royalite Oil Co., operating in Turner Valley, to "gather and use or restore to the structure, as far as possible, all the gas produced in the field, and further to make it possible for all producers in the field to share pro rata in the available gas market," Mr. Manning asserted.

Speaking on the natural resources of the province, the premier said the Royalite company has been overproducing its wells and this now has been sanctioned by the government for the time being.

"Had the government forced the Royalite wells production to be reduced, it would have resulted in restriction of a product necessary for war purposes and later would have left the city of Calgary without an adequate supply of gas.

"The government authorized the Royalite company to overproduce at present, but all such overproduction is to be treated as belonging to all producers in the field."

Mr. Manning said, "This recent development constitutes a final showdown on the question of who is in control of the resources of this province."

The government policy in regard to oil in Turner Valley precludes all possibility of any monopoly getting control of even an acre of the natural resources, he stated.

The government is doing everything possible to encourage the orderly development of the natural resources; to maintain an effective conservation program to prevent waste and unwarranted depletion of these resources; to retain at all times on behalf of the people full control over the policy under which the development is carried out; to retain at all times the right to determine the amount of rental and royalty to be paid, thereby assuring that the people as a whole will receive a fair return from the development of their resources.

The premier scored those who suggest the government should create a state monopoly of natural resources.

"This is not only impractical, but all the possible advantages to the people under so-called public ownership can be obtained under properly directed private enterprise without incurring any of the grave disadvantages," he stated.

■ ■

Montana-Dakota Co. Issues New 5% Preferred Series

The Federal Power Commission, Oct. 1, authorized Montana-Dakota Utilities Co., Minneapolis, Minn., to issue 19,512.9 shares of 5% series preferred stock of $100 par value, by means of an amendment to its certificate of incorporation, in exchange for 17,739 shares of 6% series preferred stock of $100 par value per share now outstanding. The company filed an application for the authorization under Section 204 of the Federal Power Act on Aug. 5, 1943, and requested that hearing be waived. An amendment to the application was filed on Sept. 25, 1943.

■ ■

Jones & Brooks Move To Dallas, Texas

Jones & Brooks, pipeline contractors, have recently announced the removal of their main offices from Oklahoma City to Dallas, Texas. The new office is located in the Mercantile Bank Building. Ray O. Jones and Bert Brooks are principals of the firm. Announcement is also made that the firm has been awarded a construction contract to build 81 miles of the Magnolia Pipeline Co.'s 12¾-in. oil line from Corsicana to Midland.

America Stronger

. . . and after the peace is won

While Servel is working day and night on war production and the wartime nutrition programs, every spare moment is being used to supply the answer to America's most important post-war problem—employment.

When peace returns, American industry must be prepared to give every returning American fighting man a good job. This requires planning—and action. And Servel is putting its post-war plans into action, now.

JOBS FOR RETURNING SOLDIERS

To be able to re-employ every man who left Servel to enter the armed services, to keep veteran employees, to provide jobs for many of the new workers who are helping to fulfill war contract, Servel must be prepared to do two things: First, it must be ready to resume the manufacture of pre-war products. Second, it must have new products to make and sell.

ALL-YEAR GAS AIR CONDITIONING

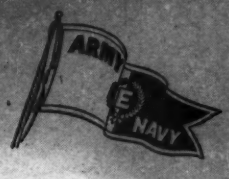
Servel is fortunate not only in being prepared to manufacture pre-war equipment, but in having the first of its new post-war products perfected and tested—ready to manufacture when war ends. This new product, the Servel All-Year

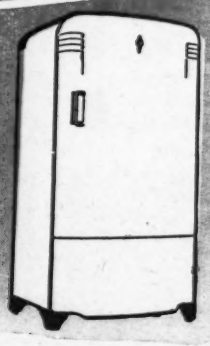
Gas Air Conditioning unit, fulfills every function of true air conditioning. It cools and dehumidifies in summer, heats in winter, gives year-round circulation and filtering.

GAS COMPANY ACTION NOW

Many Gas Utilities, without the slightest interference with the war effort, are beginning to set up nucleus air conditioning departments within their own organizations. Some are already starting to survey their markets for All-Year Gas Air Conditioning. Others are preparing to train selected men and form skeleton organizations which can be expanded promptly and effectively when war ends.

Servel continues working to see that those who are winning this war will be able to enjoy the peace when it is won.





Servel, Inc.

PEACETIME MAKER OF THE SERVEL GAS REFRIGERATOR

South Dakota Tests Show Gas

SUCCESSFUL drilling of a deep gas well test in Potter County, S. D., in which a gas flow of 86,400 cu. ft. per day was discovered, and which may result in the sinking of an oil test in the same area by an eastern syndicate, shared interest in South Dakota oil and gas development circles this summer and fall with the drilling of a wildcat oil test in Harding County.

The gas test, north of Whitlock's Crossing in Potter County, just east of the Missouri river, substantiated results of a survey of the area by the state geological department, in showing a structure of considerable size.

Reports have circulated since the completion of the gas test that the group of Gettysburg, S. D., men who financed the gas test have been approached by representatives of an eastern syndicate who have offered to drill a deep oil test in the area. If a satisfactory arrangement can be reached as to the transfer of the lease block, drilling of a well to test all formations above the granite appears likely.

The gas flow of one foot a second, 86,400 feet a day, is believed to be the largest flow of gas found so far in South Dakota. The gas was accompanied by a 50-gal. per minute flow of water through the inch and one-quarter casing. The well was drilled to the Dakota sands.

South Dakota, together with her sister state of North Dakota, has been the scene of extensive leasing operations during the last four years. Several million acres of land are now under oil and gas lease, much of it by major oil companies.

New leasing terms have been established by the South Dakota rural credit board, which has many thousands of acres of land under lease in the state. New leases will be at the rate of 10¢ an acre for the first five years and 25¢ an acre for the next five years. The new scale conforms to that of the South Dakota school and public lands leases. Both types of leases provide for one-eighth royalty to the state.

■ ■

Natural Gas Use for Carbon Black Increases

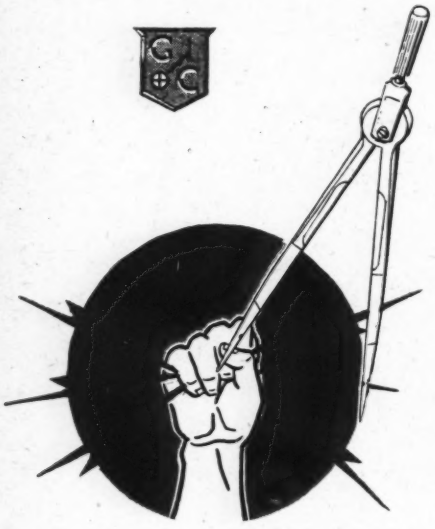
Heavy demand for carbon black in the manufacture of synthetic tire rubber has been reflected in applications for use of more natural gas produced in Oklahoma and the Texas Panhandle for processing in carbon black plants.

The Oklahoma Corporation Commission, Sept. 9, authorized the Magnolia Petroleum Co. to supply gas from three of its wells in the Fitts field of Pontotoc County, Oklahoma, to Charles Eneu Johnson & Co., operating a carbon black plant in that field under a permit from the commission.

Under the original permit the commission authorized the plant to use only the residue gas of casinghead gas processes in the gasoline plant of the Magnolia Petroleum Co. near Stonewall, Okla., in the manufacture of carbon black. The plant was operating at only 60% of its capacity on this gas. Mack Patton, of the Petroleum Administration for War, Tulsa, requested that the plant be supplied with additional gas since carbon black is much needed in prosecution of the war.

Construction of a furnace black plant for manufacture of a new type of carbon black in the Texas Panhandle of northwest Texas was announced by the Phillips Petroleum Co. on Sept. 1. The new plant will produce approximately 22,000,000 lb. per year of the new type black.

From 30 to 40 lb. of carbon black are required in the compounding of each 100 lb. of synthetic rubber. The new type furnace black is called "Philblack" and it is the result of years of research by Phillips Petroleum Co. to develop a black particularly adapted to the manufacture of synthetic rubber automobile tires.

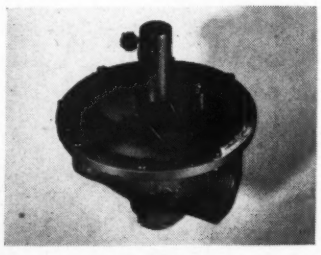


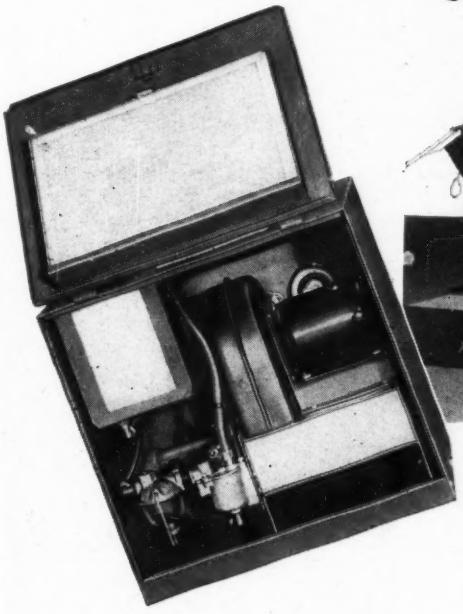
WARTIME EXPERIENCE *points to* POSTWAR PERFECTION

Since automatic controls are essential to modern, mechanized warfare, the greater part of our production is devoted to turning out vitally necessary precision built equipment. The specialized skills used to hasten the day of Victory will also serve after the peace is won. When that day comes, knowledge gained from wartime experience will be used to good advantage.

Automatic controls will give the American of tomorrow even higher standards of living and production efficiency than those now enjoyed. We will be ready to maintain our reputation as pioneers and leaders in this field.

GENERAL CONTROLS V-300 gives continuous, efficient operation at low cost. This compact low pressure gas regulator is built to last. Available in correct materials for handling natural, manufactured and L. P. gases. Sizes range from ⅜" to 2" I. P. S. Standard outlet pressures range from 2" to 5". Factory setting 3½" for average appliance use. Write for Catalog 52 with complete specifications.





...and he *gets* pictures, sharp, clear and "pronto", with the aid of this PAYNE-built Field Photographic Laboratory for the U. S. Army Air Corps. ★ Complete even to portable heating-ventilating unit (left), it is delivering dependable service on every fighting front. ★ So, too, have PAYNE *Furnaces* always "delivered" in thousands of installations, Coast to Coast, for more than a quarter-century.

V-DAY will release to our Dealers still finer PAYNE Furnaces to supply the post-war demand. But for the time being—as they, themselves, would be first to agree—"The General's" needs come first.

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NEARLY 30 YEARS OF LEADERSHIP

CONCRETE DUCT INSTALLED WITH *Hydraulic* PIPE PUSHERS

★ Developing pressure ranging from 25,000 to 150,000 lbs., Greenlee No. 795 Pipe Pushers perform the Herculean task of pushing concrete duct underground. Without tearing up road beds and without extensive trenching, they handle construction jobs with amazing speed and efficiency.

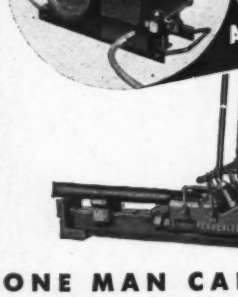
36" CONCRETE DUCT PUSHED 70 FEET UNDER RAILROAD TRACKS

Here, two Greenlee No. 795 units were used to push 36" concrete duct a distance of 70 feet under 3 railroad tracks. Pipe up to 6" is usually pushed with closed end. As shown, large duct is pushed with open end and Soil is removed through the duct.

For Tomorrow's Job — Get Facts Today!

Get the facts *now* on Greenlee Pushers. Find out how they save time and manpower — savings that pay for the pusher often on the first or second job. Two models are available to essential users on priorities of A-1-J or higher. Model 790 — 20 Ton unit handles 1¼" to 4" pipe; Model 795 — 20 Ton unit pushes larger pipe or duct beyond 4".

Write for more information— ask for Bulletin No. S-117.



A POWER PUMP THAT PROVIDES EXTRA SPEED ON PUSHING JOBS! ASK FOR DETAILS

FAST-EASY POWERFUL PORTABLE

ONE MAN CAN OPERATE

Greenlee TOOL CO.

1950 COLUMBIA AVE. • ROCKFORD, ILL.

PRODUCTS

Laboratory Furnaces

Lindberg Engineering Co., 2444 W. Hubbard St., Chicago, Ill.

Model: New Line of Electric Laboratory Furnaces.

Application: Variety of uses, including: drying precipitates, ash determinations, fusions,

ignitions, carbon determination, standard combustion, organic analyses, melting base metals, thermocouple calibrations, molten salt baths, heating, distilling, boiling, evaporating, etc.

Description: The entire line, new in both appearance and construction, includes such types as the box furnace, combustion tube, crucible furnace and hot plate. The furnaces incorporate such features as the convenient door-operating mechanism on the box furnace, which permits cooler working conditions; low voltage, high temperature type heating elements; use of a Lindberg input control for "stepless" apportioning of heat; and modern streamlined shape. Furnaces are available in different sizes for operation on 110- or 220-v. AC or DC current.

•

Outdoor Potential Transformers

General Electric Co., 235 Montgomery St., San Francisco, Calif.

Model: Type E-236 Two-Bushing Outdoor Potential Transformers.

Application: For mounting in substation structure with small size G-E current and single-bushing transformers.

Description: Height of the new transformers (which supersede Type E-116) has been reduced 15% to 50%, weight has been reduced 10% to 60%, and liquid volume 45% to 90%—depending on rating of transformer. The Type E-236 are rated 24 to 69 kv., 50/60 cycles. They have no gaskets and are hermetically sealed by means of sealed bushings, all-welded steel tank, and sealed-in-glass secondary terminals.

The transformers, which can be supplied filled with either Pyranol or oil, are said to meet the highest classifications: ¼ W, ¼ X, ¼ Y and ¼ Z. Ample insulation is provided to meet ASA standards for impulse and low-frequency tests. Mounting in the substation structure simplifies primary (high-voltage) connections, saves ground space, and eliminates need for constructing a separate foundation.

•

Welding Shield

Davis Emergency Equipment Corp., 55 Halleck St., Newark, N. J.

Model: Huntsman Acetylene and Arc Welding Shield.

Application: Designed for extra comfort and complete protection of welders.

Description: Shield has patented locking device and comfortable, easily adjustable headgear. Locking device holds shield in correct position before face to assure that line of vision passes through lens at right angles to surface of glass. It also holds shield firmly above head while welder is preparing, chipping or surveying work.

•

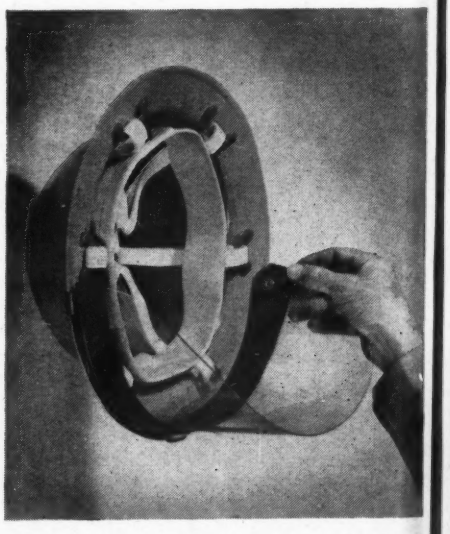
Face Guard

B. F. McDonald Co., Los Angeles, Calif.

Model: "Any-Hat Face Shield."

Application: To provide face and eye protection without interfering with vision or working freedom.

Description: Made to fit any protective hat, this transparent face shield is available in either clear or non-glare amber plastecele.



Its two-piece construction consists of visor and frame assembly. Frame assembly clips on brim of safety hat, where it remains out of the way. Visor snaps on this band by means of three snap fasteners whenever face or eye protection is desired.

•

Heavy Duty AC Welder

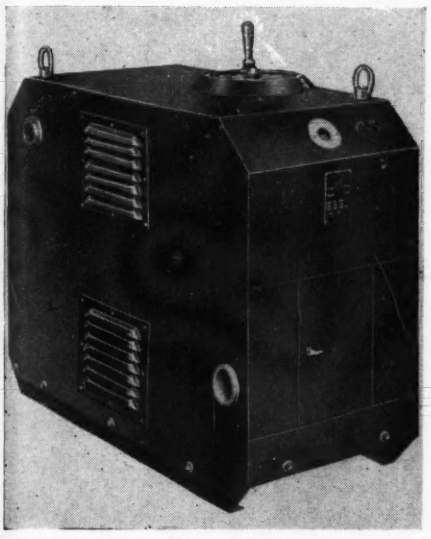
Glenn-Roberts Co., 1009 Fruitvale Ave., Oakland, Calif.

Model: G-R 49 Transformer Type AC Welder.

Application: Designed for continuous welding loads and 24-hour-a-day, seven-day-a-week war production service.

Description: The Model 49 welder is constructed, it is claimed, with a large margin of safety to handle continuous welding loads, incorporating for this purpose an oversized core working at low flux densities. Two open circuit voltages give a wide variety of applications, particularly for welding heavy plate, within the machine's output range of 100-675 amps.

Welder is said to remain extremely cool at work, meeting temperature rise specifications of NEMA even without having its forced ventilation system in operation. However, forced ventilation is standard equipment for extra coolness. Contactor with pushbutton control for the power is provid-



ed. When desired, the unit can be adapted from hand to automatic operation. Rod from ⅛ to ⅜ in. diameter is handled, only adjustment required being a twist of hand wheel.

•

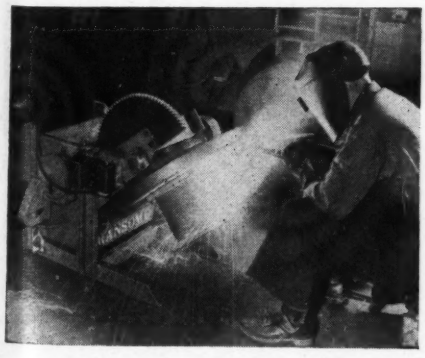
Welding Positioner

Ransome Machinery Co., Dunellen, N. J.

Model: 500-lb. capacity Welding Positioner.

Application: Designed to handle welding loads up to 500 lb., with center of gravity of load 6 in. away from table top, and with a 6-in. eccentricity.

Description: These positioners are available in hand- or motor-operated models and are claimed to be particularly suitable for work odinarily handled by women welders. Mo-



torized unit includes a Reeves variable speed drive, providing speed range up to 1 rpm. of table top. Tilting range is full 135° from horizontal, or 45° beyond vertical, providing the "down under" position for all downhand welds.

The 26-in. diameter circular table top is T-slotted, simplifying the clamping of work to it. All gears are of cut-tooth type. Machine can be furnished with regular base for bench work, or with sub-base giving a height adjustment from 27 to 42 in. from floorline to table top. Clutch arrangement permits free rotation of table top by hand when required. Motorized units can be supplied with a hand wheel in lieu of motor for tilting if so desired.

• •

Temporary Coating

Insl-X Co., 857 Meeker Ave., Brooklyn, N. Y.

Model: Insl-X Temporary Protective Coating.

Application: As a protective coating for metal, to eliminate greasing and other complicated methods such as packing in pliofilm bags.

Description: Product is manufactured in two forms: 002, for short-term protection; 003, for long periods of storage. A thin film applied by brush or dip air dries at a maximum of 15 minutes, depending on atmospheric conditions. In a clear, dry day, it is claimed, only five minutes is required for drying.

Coating covers equally well on all finishes, it is claimed by the manufacturer, and on complicated forms covers all edges without danger of flowing away. When it is desired to remove coating, it is easily stripped off by hand, no solvents being necessary. Product is claimed to have withstood 100-hour 3% salt spray tests on steel, copper, brass and aluminum without any effect.

Carboseal Anti-Leak

Gas company superintendent reports, "evermounting beneficial results."

A GAS company changed over from the distribution of wet manufactured gas to dry gas and later discovered considerable leakage in the bell-and-spigot joints of its gas mains. To stop the leaks, the joints in part of the system were recaulked . . . without success. The company later excavated through pavement on this part of the system . . . an expensive job . . . and clamped the joints.

On another part of the system the company superintendent then experimented with CARBOSEAL Anti-Leak, a liquid that swells the joint packing approximately 44 per cent in volume. Leakage was stopped. Three years later a recheck was made on the treated mains to determine the permanence of the Anti-Leak treatment. *On 4,000 feet of treated main, 65 previously reported leaky joints were tight and no other leaks were in evidence.*

The company now makes it a practice in all its dry-gas systems to treat bell-and-spigot mains with CARBOSEAL Anti-Leak before street paving. To date, 20,000 feet of 4-inch main, 10,000 feet of 6-inch main, and 5,000 feet of 8-, 10-, and 12-inch main have been treated. The company superintendent reports: "We are satisfied that this method of main treatment is effective and the program can be continued with evermounting beneficial results."*

If you have a leakage problem in bell-and-spigot joints, in a dry-gas system, use CARBOSEAL Anti-Leak. It may solve your problem as successfully as the problem was solved for this company. For further information write for the book, "Correcting Leakage in Gas Distribution Systems with CARBOSEAL Anti-Leak."

*Reprints of the superintendent's article are available.

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Unit of Union Carbide and Carbon Corporation

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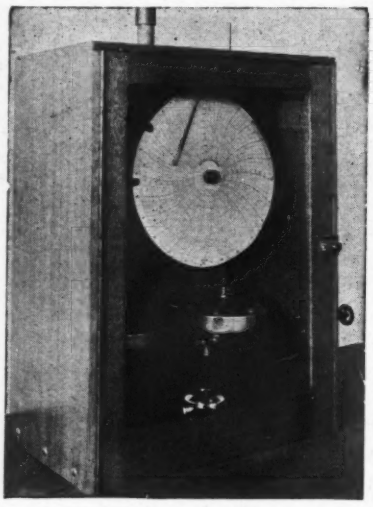
Newly enlarged laboratory facilities and material available enable us to increase our production of these precision-built instruments. For years the choice of major-company engineers, they should be serving you, also. Get full information, and ORDER NOW!



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LOS ANGELES CALIFORNIA

PEOPLE

J. C. Reinbold, general superintendent and newly elected vice president of Panhandle Eastern Pipe Line Co., Kansas City, Mo., has been active in the oil and gas industry for over 36 years. He began working in oil and gas fields during vacations while he was still in school in Oil City and Emlenten, Pa., and his first job on pipeline construction was carrying water on an 8-in. screw line out of Bear Creek Station.

J. C. Reinbold

In 1928, Mr. Reinbold became associated with Mo-Kan Pipe Line Co. as general superintendent. When Panhandle Eastern was organized, he kept that position with the new company, and has been with it ever since. He knows Panhandle Eastern from the ground up and is one of the oldest men, in point of service, in the organization.

C. H. M. Burnham, chief engineer and recently elected vice president, Panhandle Eastern Pipe Line Co., Kansas City, Mo., has devoted many years of work to engineering in the natural gas industry. In 1918 he graduated from Ohio State University with a degree in mechanical engineering. As consultant for Cities Service, from 1925 to 1936, Mr. Burnham directed construction of the Colorado-Wyoming Gas Co.'s system from Denver to Cheyenne, and was representing the natural gas department of Henry L. Doherty & Co. during the introduction of natural gas in Denver.

A commission to study the Transylvania gas fields in Roumania took Mr. Burnham to Austria, Hungary, Roumania, and Jugoslavia in 1930, and he had further experience outside the United States in 1936 when he investigated the practicality of supplying Mexico City with natural gas.

Mr. Burnham has been with Panhandle Eastern since 1937 and has been chief engineer since 1941.

•

Robert E. Allen, former assistant deputy administrator of PAW, has been appointed director of the department of information of the American Petroleum Institute of New York. Trained in the oil fields and schooled in geology and engineering at West Virginia University, Mr. Allen has now completed a cycle of petroleum industry experience that peculiarly qualifies him to help the industry tell the story of oil.

Mr. Allen is widely traveled and has worked in the principal oil states of this country and also in Australia, Canada and Mexico. He was called by Secretary Ickes and Deputy Administrator Ralph K. Davies from the chairmanship of the Alberta Petroleum Board of Canada, where he had been directing the development and conservation of oil and gas, to assist in the organization of OPC immediately after its inception and was the first divisional director appointed, and in January, 1942, was promoted to the post of assistant deputy administrator.

•

Indication that **Dick Stafford** of the Connelly Iron Sponge & Governor Co., Chicago, fully recovered from the accident in which both his arms were broken was his presence at the Pacific Coast Gas Association meeting held in Los Angeles Sept. 22 and 23.

•

R. J. Daugherty of Bartlesville, Okla., superintendent of the public relations department of Cities Service Gas Co., has been named acting chairman of the committee on safety regulations of the Kansas-Oklahoma division of the Mid-Continent Oil and Gas Association.

•

J. P. Ashcraft, branch manager at Dallas, Texas, of Minneapolis-Honeywell Regulator Co., has announced the appointment of **Charles F. Woods** as service and installation manager of the branch. Mr. Woods became associated with the gas industry in 1927 when he joined the Dallas Gas Co. as fitters' helper. After serving this company in various capacities for 10 years he successively joined Grasinger-Kendall, Inc., an appliance company; Allan Engineering Co., heating and air conditioning engineers, and Southern Union Gas Co., for which company he later became town plant manager at Brenham, Texas. In October, 1942, he joined the Post Engineer, Camp Swift, Texas, as supervisor, heating section. He is an associate member of the American Society of Heating and Ventilating Engineers.

C. F. Woods

•

Mark S. Patton of Tulsa, Okla., has been appointed director of natural gas and natural gasoline for the Petroleum Administration for War in the midwestern states (District II), according to PWA's **Harold L. Ickes.** The new district director was born in Kansas City, Kan., in 1887 and attended the public schools of that city. He entered the oil business in 1905 as a tool dresser. Several years later he became a salesman and assistant to the sales manager of the Cudahy Packing Co. of Chicago.

In 1916 Mr. Patton became associated with the Western Petroleum Co. of Chicago and a year later became sales manager and manager of the Atwood Refining Co. of Tulsa. In 1920 Mr. Patton joined the Hurley Gasoline Co. staff as

There's a Great Day Coming

It's important to tell her how to care for the gas range in her kitchen, how to make it last. The Roper "Care and Operation of the Gas Range" booklet does just that. Write for Free sample copy containing useful information.

When V-Day brings our victorious fighting men home from the global war fronts, your customers will require many important things for their homes. One of these will be the new Roper (lp) gas range—a range that has always been America's finest in terms of customer appeal.

After the war the Roper (lp) gas range will march along from where it left off—giving you distinctive styling, practical engineering, new features, and sound, hard-hitting promotions.

Until that great day comes, urge your customers to Buy More War Bonds and do everything else to hasten the day of Victory. That includes taking good care of the ranges they now own.

ROPER (lp) *Means*
Certified Performance

GEO. D. ROPER

ROPER GAS RANGES FOR ALL GASES INCLUDING (LP) LIQUEFIED PETROLEUM GAS

sales manager. He is today the owner of the company, and at present is on a leave of absence from his firm.

•

Collaborating with all the state regulatory agencies having to do with oil and gas, **Robert E. Hardwicke** of Fort Worth, Texas, has assumed his new duties as special counsel on a full-time basis, with headquarters at Houston. Known as one of the nation's outstanding legal experts on state petroleum production regulatory activities, Mr. Hardwicke will represent PAW before the Interstate Oil Compact Commission and the various state regulatory agencies concerned with oil and gas matters, including Arkansas, Alabama, California, Colorado, Illinois, Louisiana, Mississippi, Michigan, Kansas, North Dakota, New Mexico, Oklahoma and Texas.

•

E. J. Meade, vice president of the Atlanta Gas Light Co., Atlanta, Ga., and the Florida Public Utilities Co. has been promoted to the position of operating vice president, according to a recent announcement made by H. Carl Wolf, president. Mr. Wolf has also announced the selection of **D. A. Crawford** as vice president of the company. Mr. Crawford is president of the Roanoke Gas Light Co., Roanoke, Va., and associated companies in Virginia and Tennessee.

•

The Natural Gas Odorizing Co., Baton Rouge, La., announces the addition of **John C. Worth** to its sales and engineering force. Mr. Worth was formerly connected with the Memphis Power & Light Co., and its successor, Memphis Light, Gas & Water Division, where he served successively as chemist, assistant superintendent of gas manufacture, and operating engineer of the gas department.

•

The new manager in charge of domestic, commercial, industrial and heating service of the Nashville (Tenn.) Gas & Heating Co. is **Terry Hart.** He is a native of Nashville and a graduate from the Vanderbilt University School of Engineering.

•

New president of the Southern Union Gas Co. with headquarters in Dallas, Texas, is **Wofford Cain,** who years ago personally supervised laying the first lines of the company. He was elected at a recent meeting of the board of directors.

•

As announced by John V. McKinney, president of the Iowa-Illinois Gas and Electric Co. (headquarters, Rock Island, Ill.), **John M. Hollingsworth** has been appointed manager of the newly organized sales promotion department. Mr. Hollingsworth, whose office will remain in Davenport, Iowa, will conduct the entire promotional activities of the company.

•

Company history was reviewed recently when **E. E. Lambe** marked Sept. 1 as the beginning of his 31st year with the Cities Service Gas Co. Thirty years ago officials of the old Quapaw Gas Co.—forerunner of Cities Service Gas Co.—brought Mr. Lambe into the company's Bartlesville office as its first pressure dispatcher. Today he is chief dispatcher and one of the few "Quapaw men" in the Bartlesville office. Mr. Lambe entered the company's service on Sept. 1, 1913.

•

William A. Rorison, manager of the publications and publicity divisions of Servel, Inc., Evansville, Ind., has announced his resignation from the company to enter business as a public relations counsel. On Nov. 1 he will open offices under his own name in the Field Building, 135 S. LaSalle St., Chicago.

W. A. Rorison

Mr. Rorison will specialize in corporate public and industrial relations work, a field in which he has had more than 18 years of experience with Servel, Inc., and the Armstrong Cork Co. of Lancaster, Pa. At the present time he is offering his services to several large war industries in the development of employee morale and increased war production.

Mr. Rorison has been associated with Servel, Inc., for more than 14 years in public relations, editorial, advertising and sales promotion work. In addition to handling the company's local and national publicity programs, he also served as editor of the Servel News, the Servel Salesman and several other publications. One of these magazines, the Servel News, has received several Direct Mail Advertising Assocation awards and more recently was given first award in a nation-wide contest conducted by the Chicago Industrial Editors Association in December, 1942.

Since Servel's conversion to war production in April, 1942, he has assisted in planning and publicizing many of the company's nation-wide war-time service programs.

•

Effective Oct. 3, **Wilbur Masheter,** former district engineer of Santa Monica (Calif.) Bay district, Southern Counties Gas Co., succeeded **Harry Faull** as meter and regulator engineer, who has resigned from the company. **Thad Waheman** has been appointed acting district engineer in Santa Monica.

•

New gas distribution superintendent of the Pontiac (Mich.) division, Consumers Power Co., is **John D. Williams,** who was general superintendent of gas manufacture and distribution for the company prior to the introduction of natural gas in the principal operating divisions. A veteran of 25 years with the company, Mr. Williams is a former superintendent of the Jackson gas plant and of the gas plants in Flint.

Fred H. Bunnell has been named general superintendent of gas distribution. A graduate of Michigan State College and a member of the Michigan bar, Mr. Bunnell was associated with the gas department of the Lansing division until about a year ago, when he came to Jackson to work on gas engineering problems.

•

General safety supervisor is the new title of **Harry J. Burton,** veteran executive and leader in safety activities of the Consumers Power Co., Mich. Mr. Burton

General Pipe Line Contractors

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DALLAS, TEXAS

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STEEL SERVICE TEES *for welding*

Made of low carbon steel of the same analysis as steel pipe. Fully tested for use on gas pressures up to 500 lbs. per sq. in. Readily welded to any steel main or service pipe. Provide maximum safety since entire installation or shutting off of a service can be done without letting the gas blow. Rely upon MUELLER Equipment for best results.

MUELLER CO. DECATUR, ILL.

heads a reorganized safety department which will promote safety throughout all departmnts and divisions of the company.

•

E. P. Millikan has been appointed sales manager of the Middle West division of the American Stove Co., with headquarters in Chicago. **R. W. (Doc) Campbell** returns to Los Angeles from Cleveland to become sales manager of the Pacific Coast division.

•

From Honolulu comes word that **Edward S. Jones,** gas engineer, Honolulu Gas Co., Ltd., has been ill since last May. Mr. Jones is well known throughout the industry, both here and in the islands.

•

C. A. Breitung, formerly Oklahoma manager of the Southwest Natural Gas Co. at Ada, Okla., has resigned as vice president and a director of the company in order that he may devote his full time to private business.

Mr. Breitung remained at Ada from 1927 to the late summer of 1942, when he removed to Dallas, Texas, to assume his duties as vice president. He also was a member of the board of directors of the Oklahoma Utilities Association, announcing his resignation at a meeting of that board on Sept. 16. He will now make his home at San Antonio, Texas.

•

Chicago Vitreous Enamel Product Co., Cicero, Ill., announces the appointment of **Carl G. Strandlund,** formerly in charge of its armor plate division, to the office of vice president and general manager. Prior to his service with Chicago Vitreous, which started some 18 months ago, Mr. Strandlund had been a nationally known consulting engineer.

Dana Chase, formerly general sales manager, and **R. L. Foraker,** formerly service manager, have resigned. No announcement has been made of their future plans.

•

The Institute of Gas Technology at Illinois Institute of Technology announces the appointment of **Prof. John I. Yellott** as full-time director. Prof. Yellott, an honor graduate in mechanical engineering of Johns Hopkins University, was formerly chairman of mechanical engineering at Stevens Institute of Technology, and a member of the faculty at the University of Rochester. He was named as the outstanding mechanical engineer of the past decade in 1939 by the Pi Tau Sigma, honorary fraternity, and for the past three years has been chairman of Illinois Tech's mechanical engineering department and became director of the war training program with its inception in 1941. In this service he received the Chicago and Illinois Chamber of Commerce awards for distinguished service in 1942, for his educational training activities. He was named as the outstanding young man of Chicago for 1942 by the Chicago group, and of Illinois by the Illinois group in awarding him the Illinois Civic Service Award.

John I. Yellott

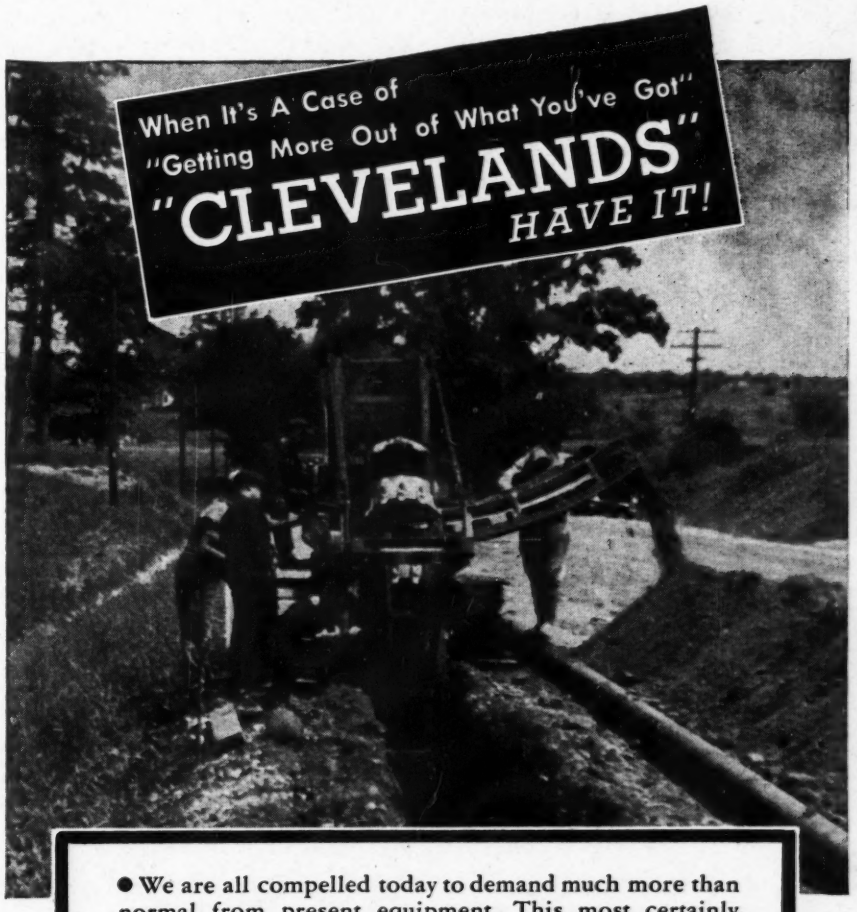
The war training program directed by Prof. Yellott has been the largest in the country in a single city and at a privately operated college, with an enrollment of more than 36,000 persons.

Established to provide a central research and educational service for the entire gas industry, the Institute of Gas Technology has a fellowship group of 21 post-graduate students training for specialized service in the gas industry and has an annual budget of nearly $200,000. Several long-range fundamental research programs and a number of research projects for member companies are under way.

Prof. Yellott succeeds **Harold Vagtborg,** who will henceforth devote his entire time to his duties as director of the Armour Research Foundation. In becoming full-time director of the Gas Institute, Prof. Yellott will also assume the duties of directing the educational program. **Dr. Lincoln R. Thiesmeyer,** who formerly served as educational director, resigned effective Sept. 1 to enter government service.

•

Announcement of the appointment of **F. B. DeLong** to the position of vice president and general manager of sales for Columbia Steel Co., subsidiary of United States Steel Corp., was made recently by **William A. Ross,** president of the company. Mr. DeLong fills the vacancy created by **J. R. Gregory,** who was appointed vice president of sales of the newly formed Geneva Steel Co., a U. S. Steel subsidiary at Geneva, Utah, where Columbia Steel Co. is building a $180,000,000 steel mill for the government.



● We are all compelled today to demand much more than normal from present equipment. This most certainly applies to trenchers for the demand for emergency work on existing and new lines is heavy.

Because of their superior rugged construction, correct design, speed, flexibility and power, CLEVELAND owners have found that their CLEVELANDS have met this increased load. Records show that CLEVELANDS have had the stamina, to stand up under the toughest going day after day delivering maximum trench footage at minimum cost and with minimum times out for repairs.

When the going gets tough you can depend upon your "CLEVELAND".

THE CLEVELAND TRENCHER COMPANY
20100 ST. CLAIR AVE. "Pioneer of the Small Trencher" CLEVELAND, OHIO
"CLEVELANDS" Save More . . . Because they Do More

Oklahoma Commission Refuses Modifications

FOLLOWING an all-day hearing Sept. 10, a majority of the Oklahoma Corporation Commission refused to repeal or modify orders of the commission promulgated in 1922 which permit increases, decreases or changes in gas, electric or telephone rates without public hearings under certain conditions.

William J. Armstrong, a member of the three-man commission, had filed an application for repeal of sections of these orders which would permit increases in rates without public hearings. He charged that the regulations are illegal and capable of being used to perpetrate a "subterfuge and a fraud on the public." He charged that attempts were made to increase certain gas and water company rates under these rules without knowledge of customers or other interested parties.

The majority members of the commission, Reford Bond, chairman, and Ray O. Weems, vice chairman, put Paul R. Reed, general auditor of the commission, on the witness stand to show that he had been with the commission since 1928 and during that time only one gas company had ever raised rates without a public hearing; therefore, there were no protests from consumers or city officials and the increases involved but one community. He testified, however, that under the rule a total of $31,442,728 had been saved to customers from 1935 to 1941, inclusive, through gas and electric rate reductions accomplished under the regulations under controversy.

"Oklahoma has the lowest gas rates in the Union," Mr. Reed declared, referring to the overall rate picture in the state. He declared that in many cases it was possible to secure from public utilities agreements to reduce rates voluntarily through negotiations and conferences, whereas these results could not have been accomplished if public hearings had been required.

Under commission orders 2112, 2072 and 2089, issued in 1922, it was made possible to change rates or regulations of public utilities by filing the proposed changes with the commission, posting public notices in the offices of the utilities, in the city hall and county building, and publishing notices in a newspaper of general circulation. If at the end of 30 days after the first notice was filed no interested party protested and the corporation commission did not demand a hearing, the rates or other changes would become effective without a public hearing.

Testimony developed, however, that no electric or water rates had been raised under this regulation, and the rates of only one gas company and of only 11 small telephone companies had been raised without public hearings during the past 20 years. In all of these cases, the commission experts testified, all interested parties had been notified in advance of the proposed changes and that no protests had been filed with the commission. The testimony developed that most of the public utilities preferred that applications for rate increases be subjected to public hearings.

The majority members, in an opinion from the bench denying the application, held that the orders were based on constitutional authority of the commission, that they had never operated as a "subterfuge or a fraud on the public," and that, on the contrary, they had resulted in saving millions of dollars to the public in rate reductions.

Commissioner Armstrong stated that he would file a minority opinion dissenting from the views of the majority in the case.

■ ■

Here's to the SECOND DAY after the war

Don't look for us the first day after the war. We'll be out . . . *celebrating*. But the second day we'll be back cleaning up our war contracts so that we can plunge into production of even better Klixon snap-acting gas valves and thermostats to meet *your* post-war production demands.

SPENCER THERMOSTAT CO. KLIXON ATTLEBORO, MASS.

50,000,000 cu. ft. of Gas Available to Tulsa Soon

The Oklahoma Natural Gas Co. in August started work on a 35-mile, 12-in. natural gas pipeline from its trunk line terminal near Holdenville, Okla., to the new Lula gas area north of Centrahoma in Coal County, Okla. The line will cost approximately $500,000.

The Lula field was opened by the Stanolind et al. No. 1 Cushing royalty for an estimated 4,000,000 cu. ft. of gas per day from the Cromwell sand.

Joseph Bowes, president of the Oklahoma Natural Gas Co., has notified Tulsa, Okla., authorities that a potential supply of approximately 50,000,000 cu. ft. of gas per day will be available to Tulsa from two new pipelines completed this year and storage gas in wells in Osage County, Okla.

■ ■

United Gas Pipe Line Co. Sets Safety Example

In work equivalent to the testing of 65,940 orifice meters during a six-year period, Shreveport, La., district field, United Gas Pipe Line Co., measurement men showed the effectiveness of carefully applied safe working practices in successfully avoiding loss of time by accidents. With all the hazards of gas system work, including those due to high pressures, possible injuries from handling heavy equipment, as well as those of 776,916 miles of auto travel, the Shreveport men carried out their duties of testing orifice meters, positive meters, recording thermometers, pressure gages, recording calorimeters and gravitometers, and all the usual repair work without a single accident.

SEMET-SOLVAY ENGINEERING CORPORATION

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Water Gas Machines	Condensers
Washer Coolers	Waste Heat Boilers
Naphthalene Scrubbers	Producer Gas Plants

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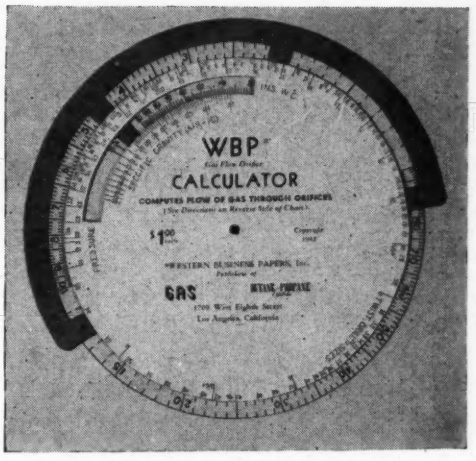
W.B.P. Gas Flow Orifice Calculator



How Calculator Operates

To Find Drill Size

1. Rotate movable dial until specific gravity coincides with gas pressure.
2. Rotate movable segment until proper orifice coefficient coincides with desired gas quantity (cu. ft. per hr.). If orifice coefficient is not known, use 0.8.
3. Read drill size on movable dial opposite the arrow (0.8) on the orifice coefficient scale of movable segment.

To Find Cubic Feet Per Hour From B. t. u. Per Hour

1. Rotate movable segment until heating value of gas (B. t. u. per cu. ft.) coincides with gas quantity in thousands of B. t. u. per hour on quantity scale.
2. Read gas quantity in cu. ft. per hour against 1.0 (orifice coefficient scale).

To Find Quantity (Cu. ft. Per Hour) for Given Drill Size

1. Rotate movable dial until specific gravity coincides with gas pressure.
2. Rotate movable segment until arrow (0.8) on the orifice coefficient scale is opposite appropriate drill size.
3. Read quantity (cu. ft. per hr.) against appropriate orifice coefficient. If orifice coefficient is not known, use 0.8.

To Find B. t. u. Per Hour Given Cubic Feet Per Hour

1. Rotate movable segment until 1.0 on the orifice coefficient scale coincides with the gas quantity in cu. ft. per hour.
2. Read corresponding B. t. u. per hour in thousands against appropriate heating value (B. t. u. per cu. ft.).

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Watertown, S. D., Installs Liquefied Gas Units

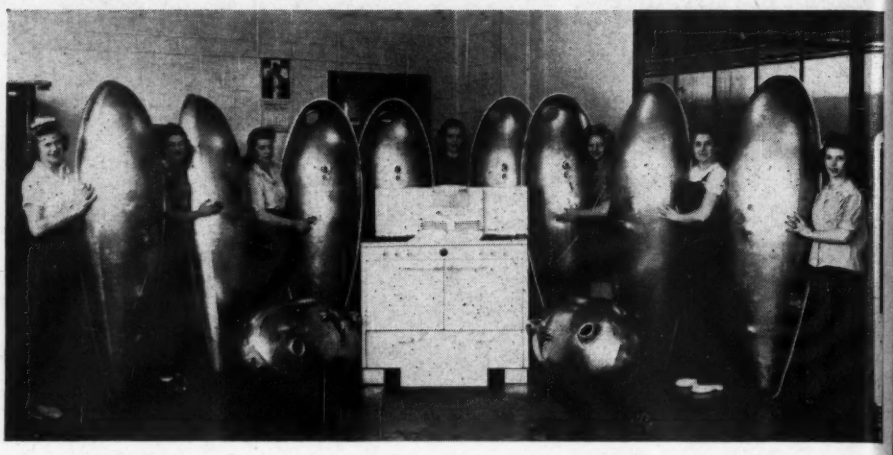
WAR-TIME demands upon the gas utility company are bringing many gas plant operators who wish to expand facilities and give the best possible service to their customers at minimum cost to consider a liquefied petroleum gas installation, according to John K. Heller, president of the Gasair Corp. of San Francisco.

Mr. Heller has reported the completion of an installation, distributing a butane-air mixture to domestic and industrial consumers in Watertown, S. D. The installation was made for the Watertown Municipal utilities department, and enabled the city to reduce its rates about 15%.

The two 10,000 cu. ft. per hour units, the products of the Gasair Corp., were installed by Ray B. Fannin of Denver. The units replaced a carbureted water gas plant which the city acquired Jan. 1 when it purchased the Watertown Gas Co. The existing distribution system was used with the butane units. It consists of 15 miles of underground mains serving 10,000 meters.

Prime reason for making the installation of the butane gas system was that the city could deliver gas of a higher Btu. at a lower rate. In the butane gas, 714 cu. ft. contain 500,000 Btu., whereas it took 1000 feet of the old gas to deliver the same number of heat units. Under the new rate, the first 2000 cu. ft. per month cost 21¢ per 100 cu. ft.; the next 3000 cu. ft., 18¢ per 100 cu. ft.; the next 10,000 cu. ft., 14¢ per 100 cu. ft.; and all over 15,000 cu. ft., 10¢ per 100 cu. ft.

The system operates automatically, saving manpower.



Another all-American magic chef goes to war. The material that would have been used to make it has produced 10 droppable auxiliary gasoline tanks, and 10 of our fighter planes will fly farther because some housewife has made the sacrifice. These American Stove Co. employees are right off the production line.

Furnace Parts Committee Organized by OPA

Six furnace and heating boiler parts industry executives appointed by OPA to serve on the repair and conversion parts industry advisory committee held their organization meeting on Oct. 5 in Washington, D. C.

The committee was formed to consult with OPA and make recommendations concerning problems of pricing, delivery terms and trade discounts on sales and installations of repair and conversion parts for furnaces and heating boilers. The group will also consider the proposed revisions of RMPR 236, in relation to their effect on prices of furnace and heating boiler repair and conversion parts.

Members of the committee are: William L. Healey, Waverly Heating Supply Co., Boston, Mass.; Henry K. Krekel, Stove Manufacturers Corp., Newark, N. J.; C. B. Magrath, Northwestern Stove Repair Co., Chicago; John H. Oswald, H. C. Oswald Supply Co., New York City; H. F. Randolph, International Heater Co., Utica, N. Y.; Harley H. Smith, United States Radiator Corp., Washington, D. C.

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OPA Rates on Used Pipe

Used iron and steel pipe in the ground, when sold to a consumer or exporter, may be sold for the ceiling price for "reusable" pipe less the cost of lifting and reconditioning the pipe and loading it on railroad cars or trucks, the Office of Price Administration announced Sept. 28.

If the seller is unwilling or unable to establish the cost of lifting, reconditioning and loading, then the price must not exceed the maximum price for "used structural pipe."

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Ruling on Range Boilers

Simplification and standardization of porcelain lined range boilers and hot water storage tanks were announced on Sept. 23 by the War Production Board in amendment to Order L-199, plumbing and heating tanks. This completes the simplified program for range boilers and water storage tanks.

The action also permits the release from inventory of copper and copper base alloy, monel metal and stainless steel range boilers for replacement for existing similar installations, with the provision that the replaced tank is of non-ferrous metal, and that the replaced tank will be delivered to an approved scrap dealer. It is estimated that an inventory of 2500 of these copper and copper base alloy, monel metal and stainless steel range boilers now exists.

Permission to release all metal supports in inventory and to resume production of cast iron boiler stands was also granted by the revised order.

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NFPA Issues Fire Codes Book Covering Gas and LP-Gases

A new book entitled the National Fire Codes for Flammable Liquids, Gases, Chemicals and Explosives, 1943, has just been issued by the National Fire Protection Association, 60 Batterymarch St., Boston, Mass., at a cost of $3 a copy. This new volume is divided into nine parts: Flammable Liquid Storage and Handling; Oil and Gasoline Burning Equipment; Liquefied Petroleum Gases; Utilization of Flammable Liquids; Gases; Refrigeration and Fumigation; Explosive and Nitrocellulose Materials; Tables of Properties — Hazardous Chemicals, Flammable Liquids; Flash Point Tests.

The several codes are widely used as a basis of law, or by administrative authorities in the exercise of their discretionary power, as well as by property owners as a guide to good practice, and for insurance purposes.

■ ■

WPB Issues Priorities Book

A new publication, designed to aid business men and government officials in obtaining information on all products, materials and service handled by the War Production Board has been issued by WPB. The publication, titled "Products and Priorities," includes all information formerly contained in "Priorities" and in "Product Assignments," both of which will be discontinued. A year's subscription of 13 issues may be obtained for $2 from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. Single issues are available at 20¢ each.